



Join us : <https://t.me/ComputerEngineeringDepartment22>

· $ty' = y + \sqrt{y^2 + t^2}$, $y(e^2) = 0$ Find the solution of the initial value problem



$|y - \sqrt{y^2 + t^2}| = e^{-2}t^2$ ☐

$|y + \sqrt{y^2 + t^2}| = e^{-2}t^2$ ☒

$|y + \sqrt{y^2 + t^2}| = e^{-4}|t|^3$ ☐

none of the given answers ☐

$|y - \sqrt{y^2 + t^2}| = e^{-4}|t|^3$ ☐

الإجابة الصحيحة هي: $|y + \sqrt{y^2 + t^2}| = e^{-2}t^2$

· $y' + \frac{2y}{t^3} = \frac{-10}{t^3}$ Find the general solution of the differential equation



$y = 5e^{1/t^2} + c$ ☐

$y = ce^{1/t^2} - 5$ ☒

$y = ce^{-1/t^2} - 5$ ☐

$y = ce^{-1/t^2} + 5$ ☐

$y = ce^{1/t^2} + 5$ ☐

الإجابة الصحيحة هي: $y = ce^{1/t^2} - 5$

· $ty' + (3t + 4)y = t^4$ Find an integrating factor for the differential equation



$t^4 e^{-3t}$ ☐

$t^4 e^{3t}$ ☒

$t^2 e^{3t}$ ☐

None of these answers ☐

$t^2 e^{-3t}$ ☐

الإجابة الصحيحة هي: $t^4 e^{3t}$

. $ty' + (3t + 4)y = t^4$ Find an integrating factor for the differential equation



$t^4 e^{-3t}$ ☐

$t^4 e^{3t}$ ☒

$t^2 e^{3t}$ ☐

None of these answers ☐

$t^2 e^{-3t}$ ☐

الإجابة الصحيحة هي: $t^4 e^{3t}$

:Determine the order of the differential equation and state whether the equation is linear or nonlinear

$$t^2 \frac{dy}{dt} + y = \tan t$$



Second order nonlinear equation ☐

Third order nonlinear equation ☐

First order nonlinear equation ☐

Second order linear equation ☐

First order linear equation ☒

الإجابة الصحيحة هي: First order linear equation

If $y = t^{-8} + ct^{-4}$, where c is a constant, then y is a solution of the equation



$ty' + 4y = -4t^{-8}$ ☒

$ty' - 2y = -t^{-4}$ ☐

none of the given equations ☐

$ty' + 2y = -t^{-4}$ ☐

$ty' - 4y = -4t^{-8}$ ☐

الإجابة الصحيحة هي: $ty' + 4y = -4t^{-8}$

. $y' + y = 2te^{-t}$, $y(0) = -3$ Find the solution of the initial value problem

None of the given answers ☐

$y(t) = e^t(t^2 - 3)$ ☐

$y(t) = e^t(t^2 + 3)$ ☐

$y(t) = e^{-t}(t^2 + 3)$ ☐

$y(t) = e^{-t}(t^2 - 3)$ ☒



الإجابة الصحيحة هي: $y(t) = e^{-t}(t^2 - 3)$

?Which of the following differential equations is separable

$y' = \frac{t^2 y - y}{2t^2 y + 3t}$ ☐

$y' = \frac{ty^2 - y}{2ty^2 + 3t}$ ☐

$y' = \frac{t^2 y^2 - y}{2t^2 y^2 + 3t}$ ☐

none of the given equations ☐

$y' = \frac{ty - y}{2ty + 3t}$ ☒



الإجابة الصحيحة هي: $y' = \frac{ty - y}{2ty + 3t}$

?Which of the following differential equations is homogeneous

$y' = \frac{t^3 + y^3}{ty^2}$ ☒

$y' = \frac{t^3 + y^3}{t^2 y^2}$ ☐

$y' = \frac{t^3 + y^3}{ty}$ ☐

$y' = \frac{t^3 + y^3}{ty^3}$ ☐

none of the given equations ☐



الإجابة الصحيحة هي: $y' = \frac{t^3 + y^3}{ty^2}$

. $y' + y^2 \sin(3t) = 0$ Find the solution of the differential equation

none of the given answers ☐

$y = \frac{-3}{\sin(3t) + c}$ ☐

$y = \frac{3}{\cos(3t) + c}$ ☐

$y = \frac{-3}{\cos(3t) + c}$ ☒

$y = \frac{3}{\sin(3t) + c}$ ☐



الإجابة الصحيحة هي: $y = \frac{-3}{\cos(3t) + c}$

. $tyy' = 2y^2 - 5t^2$ Find the solution of the differential equation

$|y^2 - 5t^2| = c|t|^3$ ☐

$|y^2 - 5t^2| = c t^4$ ☒

$|y^2 + 5t^2| = c t^4$ ☐

none of the given answers ☐

$|y^2 + 5t^2| = c|t|^3$ ☐



الإجابة الصحيحة هي: $|y^2 - 5t^2| = c t^4$

. $y' = 6t^2y^2$, $y(1) = 1$ Find the solution of the initial value problem

$y(t) = 3 - 2t^3$ ☐

$y(t) = \frac{1}{3t^3 - 2}$ ☐

$y(t) = \frac{1}{3 - 2t^3}$ ☒

$y(t) = \frac{1}{2 - t^3}$ ☐

none of the given answers ☐



الإجابة الصحيحة هي: $y(t) = \frac{1}{3 - 2t^3}$

. $ty' = y - t \cos^2\left(\frac{y}{t}\right)$, $y(-2) = -\pi/2$ Find the solution of the initial value problem



$\tan\left(\frac{y}{t}\right) = 1 - \ln\left|\frac{t}{2}\right|$ ☒

none of the given answers ☐

$\tan\left(\frac{y}{t}\right) = 2 - \ln\left|\frac{t}{2}\right|$ ☐

$\tan\left(\frac{y}{t}\right) = 2 + \ln\left|\frac{t}{2}\right|$ ☐

$\tan\left(\frac{y}{t}\right) = 1 + \ln\left|\frac{t}{2}\right|$ ☐

الإجابة الصحيحة هي: $\tan\left(\frac{y}{t}\right) = 1 - \ln\left|\frac{t}{2}\right|$

Find the solution of the initial value problem

$$y' = 5t^2 y^2, \quad y(1) = 1$$

none of the given answers ☐

$$y(t) = 8 - 5t^3 \quad \text{○}$$

$$y(t) = \frac{3}{8t^3 - 5} \quad \text{○}$$

$$y(t) = \frac{3}{7 - 4t^3} \quad \text{○}$$

$$y(t) = \frac{3}{8 - 5t^3} \quad \text{●}$$



الإجابة الصحيحة هي: $y(t) = \frac{3}{8 - 5t^3}$

سؤال 10

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the initial value problem

$$ty' = y - 3t \sin^2\left(\frac{y}{t}\right), \quad y(2) = \pi/2$$

$$\cot\left(\frac{y}{t}\right) = 2 - 3 \ln\left|\frac{t}{2}\right| \quad \text{○}$$

$$\cot\left(\frac{y}{t}\right) = 1 + 3 \ln\left|\frac{t}{2}\right| \quad \text{●}$$

$$\cot\left(\frac{y}{t}\right) = 1 - 3 \ln\left|\frac{t}{2}\right| \quad \text{○}$$

none of the given answers ☐

$$\cot\left(\frac{y}{t}\right) = 2 + 3 \ln\left|\frac{t}{2}\right| \quad \text{○}$$



الإجابة الصحيحة هي: $\cot\left(\frac{y}{t}\right) = 1 + 3 \ln\left|\frac{t}{2}\right|$

سؤال 11

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the initial value problem

$$ty' = y + 6\sqrt{y^2 + 9t^2}, \quad y(1) = 0$$

$$|y + \sqrt{y^2 + 9t^2}| = 3t^6 \quad \text{○}$$

$$|y - \sqrt{y^2 + 9t^2}| = 3|t|^7 \quad \text{○}$$

$$|y - \sqrt{y^2 + 9t^2}| = 3t^6 \quad \text{○}$$

none of the given answers ☐

$$|y + \sqrt{y^2 + 9t^2}| = 3|t|^7 \quad \text{●}$$



سؤال 12

صحيح

درجة 1.0 من 1.0

علم السؤال

Which of the following differential equations is homogeneous?

☐ $y' = \frac{2t^2 - y^2}{2t^2 y}$

☐ none of the given equations

☐ $y' = \frac{2t^2 - y^2}{ty^2}$

☐ $y' = \frac{2t^2 - y^2}{2t^2 y^2}$

☒ $y' = \frac{2t^2 - y^2}{ty}$



الإجابة الصحيحة هي: $y' = \frac{2t^2 - y^2}{ty}$

سؤال 7

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the differential equation

$y' - y^2 \cos(t) = 0$

☐ none of the given answers is true

☐ $y = \frac{1}{\cos(t) + c}$

☐ $y = \frac{1}{\sin(t) + c}$

☒ $y = \frac{-1}{\sin(t) + c}$

☐ $y = \frac{-1}{\cos(t) + c}$



الإجابة الصحيحة هي: $y = \frac{-1}{\sin(t) + c}$

سؤال 8

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the differential equation

$tyy' = 2y^2 - 5t^2$

☐ none of the given answers

☐ $|y^2 + 5t^2| = c t^4$

☒ $|y^2 - 5t^2| = c t^4$

☐ $|y^2 + 5t^2| = c |t|^3$

☐ $|y^2 - 5t^2| = c |t|^3$



سؤال 9

صحيح

درجة 1.0 من 1.0

علم السؤال

Determine the order of the differential equation and state whether the equation is linear or nonlinear

$$t^3 \frac{d^3 y}{dt^3} + \frac{d^2 y}{dt^2} + (t^2 + 1) \frac{dy}{dt} + e^{2y} y = 0$$

Second order nonlinear equation ☐

First order linear equation ☐

Third order linear equation ☐



Third order nonlinear equation ☒

Second order linear equation ☐

الإجابة الصحيحة هي: Third order nonlinear equation

سؤال 1

صحيح

درجة 1.0 من 1.0

علم السؤال

If $y = t^{-4} + ct^{-2}$, where c is a constant, then y is a solution of the equation

$ty' + y = -t^{-2}$ ☐

$ty' + 2y = -t^{-4}$ ☐

none of the given equations ☐

$ty' - y = -t^{-2}$ ☐



$ty' + 2y = -2t^{-4}$ ☒

الإجابة الصحيحة هي: $ty' + 2y = -2t^{-4}$

سؤال 2

صحيح

درجة 1.0 من 1.0

علم السؤال

Find an integrating factor for the differential equation

$$ty' + 2 \ln t y = t^3 e^t t^{\ln t}$$

None of these answers ☐

$t^{\ln t}$ ☐



$e^{\ln^2 t}$ ☒

e^{t^2} ☐

$t^{\ln \sqrt{t}}$ ☐

الإجابة الصحيحة هي: $e^{\ln^2 t}$

سؤال 3

صحيح

درجة 1.0 من 1.0

علم السؤال



سؤال 11

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the initial
value problem

$$ty' = y + 2t \cos^2\left(\frac{y}{t}\right), \quad y(-1) = -\pi/4$$

none of the given answers ☐

$$\tan\left(\frac{y}{t}\right) = \ln 2 - 2 \ln |t| \quad \text{○}$$

$$\tan\left(\frac{y}{t}\right) = 2 - 2 \ln |t| \quad \text{○}$$

$$\tan\left(\frac{y}{t}\right) = 1 - 2 \ln |t| \quad \text{○}$$

✓ $\tan\left(\frac{y}{t}\right) = 1 + 2 \ln |t| \quad \text{●}$

الإجابة الصحيحة هي:

$$\tan\left(\frac{y}{t}\right) = 1 + 2 \ln |t|$$



سؤال 12

خطأ

درجة 0.0 من 1.0

علم السؤال

Find the solution of the initial
value problem

$$ty' = y + 5\sqrt{y^2 + t^2}, \quad y(-1) = 0$$

$$|y + \sqrt{y^2 + t^2}| = |t|^{-3} \quad \text{○}$$

$$|y - \sqrt{y^2 + t^2}| = t^{-4} \quad \text{○}$$

$$|y - \sqrt{y^2 + t^2}| = |t|^{-3} \quad \text{○}$$

$$\times \quad |y + \sqrt{y^2 + t^2}| = t^{-4} \quad \text{●}$$

none of the given answers ○

الإجابة الصحيحة هي:

$$|y - \sqrt{y^2 + t^2}| = t^{-4}$$



سؤال 4

خطأ

درجة 0.0 من 1.0

علم السؤال

Find the general solution of the differential equation

$$y' + \frac{y}{t^2} = \frac{2}{t^2}$$

$$y = ce^{-1/t} - 2 \quad \text{○}$$

$$y = ce^{1/t} + 2 \quad \text{○}$$

✗

$$y = ce^{1/t} - 2 \quad \text{●}$$

$$y = 2e^{1/t} + c \quad \text{○}$$

$$y = ce^{-1/t} + 2 \quad \text{○}$$

الإجابة الصحيحة هي: $y = ce^{1/t} + 2$

سؤال 5

صحيح



سؤال 5

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the initial
value problem

$$y' + y = 2te^{-t}, \quad y(0) = 3$$

None of the given answers ☐

$$y(t) = e^{-t}(t^2 + 3) \quad \text{✓} \quad \text{radio button selected}$$

$$y(t) = e^t(t^2 + 3) \quad \text{radio button}$$

$$y(t) = e^{-t}(t^2 - 3) \quad \text{radio button}$$

$$y(t) = e^t(t^2 - 3) \quad \text{radio button}$$

الإجابة الصحيحة هي:

$$y(t) = e^{-t}(t^2 + 3)$$

سؤال 6

خطأ



درجة 1.0 من 1.0

علم السؤال

Determine the order of the differential equation and state whether the equation is linear or :nonlinear

$$4y \frac{d^3 y}{dt^3} + t \frac{d^2 y}{dt^2} + e^t \frac{dy}{dt} + (t^3 - 1)y = t$$

Third order linear equation ☐

Fourth order linear equation ☐

✓ Fourth order nonlinear equation ☒

Second order nonlinear equation ☐

Third order nonlinear equation ☐

الإجابة الصحيحة هي: Fourth order nonlinear equation



سؤال 8

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the
differential equation

$$y' - y^2 \cos(t) = 0$$

$$y = \frac{1}{\sin(t) + c} \quad \text{○}$$

$$y = \frac{-1}{\cos(t) + c} \quad \text{○}$$

none of the given answers is
true ○

$$y = \frac{1}{\cos(t) + c} \quad \text{○}$$



$$y = \frac{-1}{\sin(t) + c} \quad \text{●}$$

الإجابة الصحيحة هي: $y = \frac{-1}{\sin(t) + c}$



سؤال 7

خطأ

درجة 0.0 من 1.0

علم السؤال

Which of the following differential equations is homogeneous

$$y' = \frac{2t^3 y}{2t^5 - y^5} \quad \text{○}$$

none of the given equations ☐

✗

$$y' = \frac{y^4}{2t^5 - y^5} \quad \text{●}$$

$$y' = \frac{2t^2 y^3}{2t^5 - y^5} \quad \text{○}$$

$$y' = \frac{2t^2 y^2}{2t^5 - y^5} \quad \text{○}$$

الإجابة الصحيحة هي: $y' = \frac{2t^2 y^3}{2t^5 - y^5}$



سؤال 9

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the
differential equation

$$2tyy' = 5y^2 + 2t^2$$



$$|3y^2 + 2t^2| = c|t|^5$$

none of the given answers

$$|3y^2 + 2t^2| = c t^4$$

$$|3y^2 - 2t^2| = c t^4$$

$$|3y^2 - 2t^2| = c|t|^5$$

الإجابة الصحيحة هي:

$$|3y^2 + 2t^2| = c|t|^5$$



سؤال 3

صحيح

درجة 1.0 من 1.0

علم السؤال

Find an integrating factor for the differential equation

$$. ty' + (5 - t)y = t^5$$

$$t^3 e^{-2t} \quad \text{○}$$

$$t^3 e^{-t} \quad \text{○}$$



$$t^5 e^{-t} \quad \text{●}$$

$$t^5 e^{-2t} \quad \text{○}$$

None of these answers ○

الإجابة الصحيحة هي: $t^5 e^{-t}$



سؤال 6

خطأ

درجة 0.0 من 1.0

علم السؤال

Which of the following differential equations is separable

$$y' = \frac{t^2 y + y}{2t^2 y - 4t} \quad \text{○}$$

$$y' = \frac{ty + y}{2ty - 4t} \quad \text{○}$$

$$y' = \frac{t^2 y^2 + y}{2t^2 y^2 - 4t} \quad \text{○}$$

$$y' = \frac{ty^2 + y}{2ty^2 - 4t} \quad \text{○}$$



none of the given equations ☒

الإجابة الصحيحة هي: $y' = \frac{ty + y}{2ty - 4t}$



سؤال 2

صحيح

درجة 1.0 من 1.0

علم السؤال

If $y = t^{-2} + ct^{-1}$, where c is a constant, then y is a solution of the equation

$$ty' - 2y = -t^{-4} \quad \text{○}$$



$$ty' + y = -t^{-2} \quad \text{●}$$

$$ty' - y = -t^{-2} \quad \text{○}$$

none of the given equations ☐

$$ty' + 2y = -t^{-4} \quad \text{○}$$

الإجابة الصحيحة هي:

$$ty' + y = -t^{-2}$$

سؤال 3

صحيح



سؤال 10

خطأ

درجة 0.0 من 1.0

علم السؤال

Find the solution of the initial
value problem

$$y' = t^2 y^3, \quad y(1) = -1$$

none of the given answers ☐

$$y(t) = \frac{-1}{\sqrt{2 - t^3}} \quad \text{○}$$

$$y(t) = \frac{-\sqrt{3}}{\sqrt{5 - 2t^3}} \quad \text{○}$$

✗

$$y(t) = \frac{\sqrt{3}}{\sqrt{5 - 2t^3}} \quad \text{●}$$

$$y(t) = \frac{1}{\sqrt{2 - t^3}} \quad \text{○}$$

الإجابة الصحيحة هي:

$$y(t) = \frac{-\sqrt{3}}{\sqrt{5 - 2t^3}}$$



سؤال 12

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the initial
value problem

$$ty' = y + 4\sqrt{y^2 + t^2}, \quad y(e^2) = 0$$

$$|y + \sqrt{y^2 + t^2}| = e^{-6}t^4 \quad \text{○}$$

$$|y - \sqrt{y^2 + t^2}| = e^{-8}|t|^5 \quad \text{○}$$

$$|y - \sqrt{y^2 + t^2}| = e^{-6}t^4 \quad \text{○}$$

$$\checkmark |y + \sqrt{y^2 + t^2}| = e^{-8}|t|^5 \quad \text{●}$$

none of the given answers ☐

الإجابة الصحيحة هي:

$$|y + \sqrt{y^2 + t^2}| = e^{-8}|t|^5$$



سؤال 11

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the initial
value problem

$$ty' = y + 2t \sin^2\left(\frac{y}{t}\right), \quad y(2) = \pi/2$$

$$\cot\left(\frac{y}{t}\right) = 2 + 2 \ln\left|\frac{t}{2}\right|$$

✓ $\cot\left(\frac{y}{t}\right) = 1 - 2 \ln\left|\frac{t}{2}\right|$

none of the given answers

$$\cot\left(\frac{y}{t}\right) = 1 + 2 \ln\left|\frac{t}{2}\right|$$

$$\cot\left(\frac{y}{t}\right) = 2 - 2 \ln\left|\frac{t}{2}\right|$$

الإجابة الصحيحة هي:

$$\cot\left(\frac{y}{t}\right) = 1 - 2 \ln\left|\frac{t}{2}\right|$$



سؤال 10

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the initial
value problem

$$y' = 3ty^3, \quad y(1) = 1$$

$$y(t) = \frac{1}{\sqrt{3 - 2t^2}} \quad \text{○}$$

none of the given answers ☐

✓ $y(t) = \frac{1}{\sqrt{4 - 3t^2}} \quad \text{●}$

$$y(t) = \frac{-1}{\sqrt{3 - 2t^2}} \quad \text{○}$$

$$y(t) = \frac{-1}{\sqrt{4 - 3t^2}} \quad \text{○}$$

الإجابة الصحيحة هي:

$$y(t) = \frac{1}{\sqrt{4 - 3t^2}}$$

سؤال 9

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the
differential equation

$$2tyy' = 5y^2 - 4t^2$$

$$|3y^2 - 4t^2| = c t^4 \quad \text{○}$$

$$|3y^2 + 4t^2| = c|t|^5 \quad \text{○}$$

none of the given answers ☐

$$|3y^2 + 4t^2| = c t^4 \quad \text{○}$$

$$|3y^2 - 4t^2| = c|t|^5 \quad \text{●}$$

الإجابة الصحيحة هي:

$$|3y^2 - 4t^2| = c|t|^5$$

سؤال 10



سؤال 8

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the
differential equation

$$y' + y^2 \cos(3t) = 0$$

$$y = \frac{-3}{\sin(3t) + c}$$

none of the given answers is
true



$$y = \frac{3}{\sin(3t) + c}$$

$$y = \frac{-3}{\cos(3t) + c}$$

$$y = \frac{3}{\cos(3t) + c}$$

الإجابة الصحيحة هي:

$$y = \frac{3}{\sin(3t) + c}$$



سؤال 7

صحيح

درجة 1.0 من 1.0

علم السؤال

Which of the following
differential equations is
homogeneous

$$y' = \frac{t^2 y^4}{t^7 - y^7} \quad \text{○}$$

$$y' = \frac{t y^5}{t^7 - y^7} \quad \text{○}$$



$$y' = \frac{t^2 y^5}{t^7 - y^7} \quad \text{●}$$

$$y' = \frac{t^5 y}{t^7 - y^7} \quad \text{○}$$

none of the given equations ☐

$$y' = \frac{t^2 y^5}{t^7 - y^7} \text{ هي الإجابة الصحيحة}$$



سؤال 6

صحيح

درجة 1.0 من 1.0

علم السؤال

Which of the following
differential equations is
?separable



$$y' = \frac{ty + 2y}{2ty - t} \quad \text{○}$$

$$y' = \frac{t^2y^2 + 2y}{2t^2y^2 - t} \quad \text{○}$$

$$y' = \frac{t^2y + 2y}{2t^2y - t} \quad \text{○}$$

none of the given equations ○

$$y' = \frac{ty^2 + 2y}{2ty^2 - t} \quad \text{○}$$

الإجابة الصحيحة هي: $y' = \frac{ty + 2y}{2ty - t}$





سؤال 5

خطأ

درجة 0.0 من 1.0

علم السؤال

Find the solution of the initial value problem

$$y' + \frac{3}{t} y = \frac{\sin(4t)}{t^3}, \quad y\left(\frac{\pi}{8}\right) = 0$$

$$y(t) = -\frac{\cos(4t)}{t^2} \quad \text{○}$$

✗

$$y(t) = -\frac{\cos(4t)}{t^3} \quad \text{●}$$

$$y(t) = -\frac{\cos(4t)}{4t^3} \quad \text{○}$$

None of the given answers ○

$$y(t) = -\frac{\cos(4t)}{4t^2} \quad \text{○}$$

الإجابة الصحيحة هي:

$$y(t) = -\frac{\cos(4t)}{4t^3}$$



سؤال 4

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the general solution of the differential equation

$$y' + \frac{y}{t^2} = \frac{5}{t^2}$$



$$y = ce^{1/t} + 5$$
 ☒

$$y = ce^{-1/t} + 5$$
 ☐

$$y = ce^{1/t} - 5$$
 ☐

$$y = ce^{-1/t} - 5$$
 ☐

$$y = 5e^{1/t} + c$$
 ☐

الإجابة الصحيحة هي: $y = ce^{1/t} + 5$

سؤال 5





سؤال 3

صحيح

درجة 1.0 من 1.0

علم السؤال

Find an integrating factor for the differential equation

$$. ty' + (4t + 3)y = t^3$$

$$t^2 e^{4t} \quad \text{○}$$

$$t^3 e^{-4t} \quad \text{○}$$



$$t^3 e^{4t} \quad \text{●}$$

$$t^2 e^{-4t} \quad \text{○}$$

None of these answers ☐الإجابة الصحيحة هي: $t^3 e^{4t}$

سؤال 4





سؤال 2

خطأ

درجة 0.0 من 1.0

علم السؤال

If $y^2 = -2 \ln(t^2) + c$, where c is a constant, then y is a solution of the equation



none of the given equations ☐

$tyy' = -2$ ☐

$tyy' = 2$ ☐

$y' = 2y$ ☐

$y' = y$ ☐

الإجابة الصحيحة هي: $tyy' = -2$

سؤال 3





Determine the order of the differential equation and state whether the equation is linear or :nonlinear

$$t^3 \frac{dy}{dt} + y = \tan t$$



First order linear ☒ equation

Third order nonlinear ☐ equation

Second order linear equation ☐

Second order nonlinear ☐ equation

First order nonlinear ☐ equation

الإجابة الصحيحة هي: First order
linear equation



سؤال 9

صحيح

درجة 1.0 من 1.0

تم علم السؤال

Find the solution of the differential equation

$$. \quad tyy' = 3y^2 + 5t^2$$

$$|2y^2 - 5t^2| = c t^6 \quad \circ$$

$$|2y^2 + 5t^2| = c|t|^5 \quad \circ$$

$$|2y^2 + 5t^2| = c t^6 \quad \otimes$$

none of the given answers ☐

$$|2y^2 - 5t^2| = c|t|^5 \quad \circ$$



الإجابة الصحيحة هي: $|2y^2 + 5t^2| = c t^6$

سؤال 10

صحيح

درجة 1.0 من 1.0

تم علم السؤال

Find the solution of the initial value problem

$$. \quad y' = 6t^2 y^2, \quad y(1) = -1$$

$$y(t) = \frac{1}{1 - 2t^3} \quad \otimes$$

$$y(t) = \frac{3}{2 - 5t^3} \quad \circ$$

$$y(t) = \frac{1}{2t^3 - 1} \quad \circ$$

$$y(t) = 1 - 2t^3 \quad \circ$$

none of the given answers ☐



الإجابة الصحيحة هي: $y(t) = \frac{1}{1 - 2t^3}$

سؤال 11

صحيح

درجة 1.0 من 1.0

تم علم السؤال

Find the solution of the initial value problem

$$. \quad ty' = y + 3t \sin^2\left(\frac{y}{t}\right), \quad y(1) = \pi/4$$

$$\cot\left(\frac{y}{t}\right) = 1 + 3 \ln |t| \quad \circ$$

$$\cot\left(\frac{y}{t}\right) = \ln 2 - 3 \ln |t| \quad \circ$$

$$\cot\left(\frac{y}{t}\right) = 2 - 3 \ln |t| \quad \circ$$

none of the given answers ☐

$$\cot\left(\frac{y}{t}\right) = 1 - 3 \ln |t| \quad \otimes$$



الإجابة الصحيحة هي: $\cot\left(\frac{y}{t}\right) = 1 - 3 \ln |t|$

سؤال 12

خطأ

درجة 0.0 من 1.0

تم علم السؤال

Find the solution of the initial value problem

$$. \quad ty' = y + 2\sqrt{y^2 + 9t^2}, \quad y(1) = 0$$

$$|y - \sqrt{y^2 + 9t^2}| = 3|t|^3 \quad \circ$$

$$|y + \sqrt{y^2 + 9t^2}| = 3t^2 \quad \circ$$

none of the given answers ☒

$$|y + \sqrt{y^2 + 9t^2}| = 3|t|^3 \quad \circ$$

$$|y - \sqrt{y^2 + 9t^2}| = 3t^2 \quad \circ$$



الإجابة الصحيحة هي: $|y + \sqrt{y^2 + 9t^2}| = 3|t|^3$

سؤال 5

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the solution of the initial value problem

$$y' + \frac{4}{t}y = \frac{\sin(4t)}{t^4}, \quad y\left(\frac{\pi}{8}\right) = 0$$

$$y(t) = -\frac{\cos(4t)}{t^4} \quad \text{○}$$

$$y(t) = -\frac{\cos(4t)}{t^2} \quad \text{○}$$

$$y(t) = -\frac{\cos(4t)}{4t^4} \quad \text{✖}$$

None of the given answers ☐

$$y(t) = -\frac{\cos(4t)}{4t^2} \quad \text{○}$$



الإجابة الصحيحة هي: $y(t) = -\frac{\cos(4t)}{4t^4}$

سؤال 6

صحيح

درجة 1.0 من 1.0

علم السؤال

Which of the following differential equations is
?separable

$$y' = \frac{ty^2 + 2y}{ty^2 - 4t} \quad \text{○}$$

$$y' = \frac{t^2y^3 + 2y}{t^2y^2 - 4t} \quad \text{○}$$

$$y' = \frac{ty + 2y}{ty - 4t} \quad \text{✖}$$

$$y' = \frac{t^2y + 2y}{t^2y - 4t} \quad \text{○}$$

none of the given equations ☐

الإجابة الصحيحة هي: $y' = \frac{ty + 2y}{ty - 4t}$

سؤال 7

صحيح

درجة 1.0 من 1.0

علم السؤال

Which of the following differential equations is
?homogeneous

$$y' = \frac{t^3 - y^3}{ty^2} \quad \text{✖}$$

$$y' = \frac{t^3 - y^3}{ty^3} \quad \text{○}$$

none of the given equations ☐

$$y' = \frac{t^3 - y^3}{ty} \quad \text{○}$$

$$y' = \frac{t^3 - y^3}{t^2y^2} \quad \text{○}$$



الإجابة الصحيحة هي: $y' = \frac{t^3 - y^3}{ty^2}$

Determine the order of the differential equation and state whether the equation is linear or nonlinear

$$\tan t \frac{dy}{dt} + y = \ln t$$



- First order linear equation ☒
- Third order nonlinear equation ☐
- Second order linear equation ☐
- Second order nonlinear equation ☐
- First order nonlinear equation ☐

الإجابة الصحيحة هي: First order linear equation

سؤال 1

صحيح

درجة 1.0 من 1.0

تم علم السؤال

If $y = c t^{5/2}$, where c is a constant, then y is a solution of the equation



- $5ty' = y$ ☐
- $2ty' = y$ ☐
- $2ty' = 5y$ ☒
- none of the given equations ☐
- $5ty' = 2y$ ☐

الإجابة الصحيحة هي: $2ty' = 5y$

سؤال 2

صحيح

درجة 1.0 من 1.0

تم علم السؤال

Find an integrating factor for the differential equation

$$ty' + (3 - 2t)y = t^3 - t$$



- $t^3 e^{2t}$ ☐
- $t^3 e^{-2t}$ ☒
- $t^2 e^{2t}$ ☐
- $t^2 e^{-2t}$ ☐
- None of these answers ☐

الإجابة الصحيحة هي: $t^3 e^{-2t}$

سؤال 3

صحيح

درجة 1.0 من 1.0

تم علم السؤال

Find the general solution of the differential equation

$$y' + \frac{2y}{t^3} = \frac{-8}{t^3}$$



- $y = ce^{1/t^2} + 4$ ☐
- $y = ce^{1/t^2} - 4$ ☒
- $y = ce^{-1/t^2} - 4$ ☐
- $y = 4e^{1/t^2} + c$ ☐
- $y = ce^{-1/t^2} + 4$ ☐

الإجابة الصحيحة هي: $y = ce^{1/t^2} - 4$

سؤال 4

صحيح

درجة 1.0 من 1.0

تم علم السؤال