



@COMPUTERENGINEE
RINGDEPARTMENT22

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سؤال 7

صحیح

نقطة 2.0 من 2.0

علم السؤال

The Laplace transform $Y(s)$ of the solution of the initial value problem

$$y'' - 3y' - 2y = 0, \quad y(0) = -1, \quad y'(0) = 1$$

is

none of the given answers is true ☐

$$Y(s) = \frac{s-4}{s^2-3s-2} \quad \text{Ⓐ}$$

$$Y(s) = \frac{-s+2}{s^2-3s-2} \quad \text{Ⓑ}$$

$$Y(s) = \frac{s-2}{s^2-3s-2} \quad \text{Ⓒ}$$

$$Y(s) = \frac{-s+4}{s^2-3s-2} \quad \text{Ⓓ}$$



الإجابة الصحيحة هي: $Y(s) = \frac{-s+4}{s^2-3s-2}$

سؤال 8

صحیح

نقطة 2.0 من 2.0

علم السؤال

Find the Laplace transform $Y(s) = \mathcal{L}\{y(t)\}$ of the solution of the initial value problem

$$y''' + y'' + y' + y = 2\cos(2t), \quad y(0) = y'(0) = 0, \quad y''(0) = 5.$$

none of the given answers is true ☐

$$Y(s) = \frac{5s^2 + 2s + 20}{(s^2 + 4)(s^3 + s^2 + s + 1)} \quad \text{Ⓐ}$$

$$Y(s) = \frac{-5s^2 + 2s - 20}{(s^2 + 4)(s^3 + s^2 + s + 1)} \quad \text{Ⓑ}$$

$$Y(s) = \frac{-5s^2 + 2s + 20}{(s^2 + 4)(s^3 + s^2 + s + 1)} \quad \text{Ⓒ}$$

$$Y(s) = \frac{5s^2 + 2s - 20}{(s^2 + 4)(s^3 + s^2 + s + 1)} \quad \text{Ⓓ}$$



الإجابة الصحيحة هي: $Y(s) = \frac{5s^2 + 2s + 20}{(s^2 + 4)(s^3 + s^2 + s + 1)}$

سؤال 5

صحيح

درجة 1.0 من 1.0

علم السؤال

$F(s) = \frac{-2s^2 - 16}{s^2(s^2 + 4)}$. Find the inverse Laplace transform $f(t)$ of the function

none of the given answers is true ☐

$f(t) = 4t - \sin(2t)$ ☐

$f(t) = 4t - 2\sin(2t)$ ☐

$f(t) = -4t + \sin(2t)$ ☒

$f(t) = -4t + 2\sin(2t)$ ☐



الإجابة الصحيحة هي: $f(t) = -4t + \sin(2t)$

سؤال 6

صحيح

درجة 1.0 من 1.0

علم السؤال

The partial fraction decomposition of $\frac{s-1}{(s+3)^2(s^2+1)}$ has the form

$\frac{A}{(s+3)} + \frac{Bs+C}{(s^2+1)}$ ☐

$\frac{A}{(s+3)^2} + \frac{Bs+C}{(s^2+1)}$ ☐

$\frac{A}{(s+3)} + \frac{B}{(s+3)^2} + \frac{C}{(s^2+1)}$ ☐

$\frac{A}{(s+3)} + \frac{B}{(s+3)^2} + \frac{Cs+D}{(s^2+1)}$ ☒

none of the given answers is true ☐



الإجابة الصحيحة هي: $\frac{A}{(s+3)} + \frac{B}{(s+3)^2} + \frac{Cs+D}{(s^2+1)}$

سؤال 3

صحيح

درجة 1.0 من 1.0

علم السؤال

If $F(s) = \frac{1}{s^2 - 3s - 3}$ is the Laplace transform of a function $f(t)$ with $f(0) = -1$,
 $\mathcal{L}\{f'(t)\}$ then find



$$\frac{-s^2 + 4s + 3}{s^2 - 3s - 3} \quad \text{○}$$

$$\frac{s^2 - 2s - 3}{s^2 - 3s - 3} \quad \text{●}$$

$$\frac{-s^2 - 2s + 3}{s^2 - 3s - 3} \quad \text{○}$$

$$\frac{s^2 + 4s - 3}{s^2 - 3s - 3} \quad \text{○}$$

none of the given answers is true ○

الإجابة الصحيحة هي: $\frac{s^2 - 2s - 3}{s^2 - 3s - 3}$

سؤال 4

صحيح

درجة 1.0 من 1.0

علم السؤال

The inverse Laplace transform of the function $F(s) = \frac{-s + 2}{s^2 + 2s + 10}$ is



$$f(t) = -e^{-t} \cos(3t) + e^{-t} \sin(3t) \quad \text{●}$$

$$f(t) = e^{-t} \cos(3t) - e^{-t} \sin(3t) \quad \text{○}$$

$$f(t) = e^{-t} \cos(3t) + e^{-t} \sin(3t) \quad \text{○}$$

$$f(t) = -e^{-t} \cos(3t) - e^{-t} \sin(3t) \quad \text{○}$$

none of the given answers is true ○

الإجابة الصحيحة هي: $f(t) = -e^{-t} \cos(3t) + e^{-t} \sin(3t)$

سؤال 1

صحيح

جدة 1.0 من 1.0

علم السؤال

. $f(t) = \sinh(4t/5)$ Find the Laplace transform of

$F(s) = \frac{4}{25s^2 - 16}$ ☐

$F(s) = \frac{s}{25s^2 - 16}$ ☐

none of the given answers is true ☐

$F(s) = \frac{20}{25s^2 - 16}$ ☒

$F(s) = \frac{5}{25s^2 - 16}$ ☐



الإجابة الصحيحة هي: $F(s) = \frac{20}{25s^2 - 16}$

سؤال 2

صحيح

جدة 1.0 من 1.0

علم السؤال

If $F(s)$ is the Laplace transform of a function $f(t)$ with $f(0) = -4$, $f'(0) = 2$, then $\mathcal{L}\{f''(t)\}$ find

$s^2 F(s) + 4s + 2$ ☐

$s^2 F(s) - 4s + 2$ ☐

none of the given answers is true ☐

$s^2 F(s) + 4s - 2$ ☒

$s^2 F(s) - 4s - 2$ ☐



الإجابة الصحيحة هي: $s^2 F(s) + 4s - 2$

سؤال 1

صحيح

درجة 1.0 من 1.0

علم السؤال

. $f(t) = \cos(5t/2)$ Find the Laplace transform of

$$F(s) = \frac{s}{4s^2 + 25} \quad \text{○}$$

$$F(s) = \frac{10}{4s^2 + 25} \quad \text{○}$$

$$F(s) = \frac{4s}{4s^2 + 25} \quad \text{●}$$

none of the given answers is true ○

$$F(s) = \frac{2s}{4s^2 + 25} \quad \text{○}$$



الإجابة الصحيحة هي: $F(s) = \frac{4s}{4s^2 + 25}$

سؤال 2

صحيح

درجة 1.0 من 1.0

علم السؤال

If $F(s)$ is the Laplace transform of a function $f(t)$ with
 $\mathcal{L}\{f''(t)\}$ $f(0) = 6$, $f'(0) = -6$, then find

none of the given answers is true ○

$$s^2 F(s) + 6s + 6 \quad \text{○}$$

$$s^2 F(s) - 6s + 6 \quad \text{●}$$

$$s^2 F(s) + 6s - 6 \quad \text{○}$$

$$s^2 F(s) - 6s - 6 \quad \text{○}$$



الإجابة الصحيحة هي: $s^2 F(s) - 6s + 6$

سؤال 7

صحيح

درجة 2.0 من 2.0

٣ علم السؤال

The Laplace transform $Y(s)$ of the solution of the initial value problem

$$y'' - 3y' - 2y = 0, \quad y(0) = -1, \quad y'(0) = -1$$

is

$$Y(s) = \frac{-s + 4}{s^2 - 3s - 2} \quad \text{○}$$

none of the given answers is true ○



$$Y(s) = \frac{-s + 2}{s^2 - 3s - 2} \quad \text{●}$$

$$Y(s) = \frac{s - 2}{s^2 - 3s - 2} \quad \text{○}$$

$$Y(s) = \frac{s - 4}{s^2 - 3s - 2} \quad \text{○}$$

الإجابة الصحيحة هي: $Y(s) = \frac{-s + 2}{s^2 - 3s - 2}$

سؤال 8

صحيح

درجة 2.0 من 2.0

٣ علم السؤال

Find the Laplace transform $Y(s) = \mathcal{L}\{y(t)\}$ of the solution of the initial value problem

$$y''' + y'' + y' + y = 5 \cos(t), \quad y(0) = y'(0) = 0, \quad y''(0) = -4.$$

$$Y(s) = \frac{-4s^2 + 5s + 4}{(s^2 + 1)(s^3 + s^2 + s + 1)} \quad \text{○}$$



$$Y(s) = \frac{-4s^2 + 5s - 4}{(s^2 + 1)(s^3 + s^2 + s + 1)} \quad \text{●}$$

$$Y(s) = \frac{4s^2 + 5s - 4}{(s^2 + 1)(s^3 + s^2 + s + 1)} \quad \text{○}$$

none of the given answers is true ○

$$Y(s) = \frac{4s^2 + 5s + 4}{(s^2 + 1)(s^3 + s^2 + s + 1)} \quad \text{○}$$

الإجابة الصحيحة هي: $Y(s) = \frac{-4s^2 + 5s - 4}{(s^2 + 1)(s^3 + s^2 + s + 1)}$

سؤال 5

صحيح

درجة 1.0 من 1.0

علم السؤال

Find the inverse Laplace transform $f(t)$ of the function

$$F(s) = \frac{36}{s^2(s^2 + 9)}.$$



$$f(t) = 4t - \frac{4}{3}\sin(3t) \quad \text{Ⓐ}$$

$$f(t) = -4t + \frac{4}{3}\sin(3t) \quad \text{Ⓑ}$$

$$f(t) = -4t + 4\sin(3t) \quad \text{Ⓒ}$$

$$f(t) = 4t - 4\sin(3t) \quad \text{Ⓓ}$$

none of the given answers is true ☐

الإجابة الصحيحة هي: $f(t) = 4t - \frac{4}{3}\sin(3t)$

سؤال 6

صحيح

درجة 1.0 من 1.0

علم السؤال

The partial fraction decomposition of $\frac{s+1}{(s-1)(s^2+1)^2}$ has the form



$$\frac{A}{(s-1)} + \frac{Bs+C}{(s^2+1)} + \frac{Ds+E}{(s^2+1)^2} \quad \text{Ⓐ}$$

$$\frac{A}{(s-1)} + \frac{Bs+C}{(s^2+1)^2} \quad \text{Ⓑ}$$

none of the given answers is true ☐

$$\frac{A}{(s-1)} + \frac{Bs+C}{(s^2+1)} \quad \text{Ⓒ}$$

$$\frac{A}{(s-1)} + \frac{B}{(s^2+1)} + \frac{C}{(s^2+1)^2} \quad \text{Ⓓ}$$

الإجابة الصحيحة هي: $\frac{A}{(s-1)} + \frac{Bs+C}{(s^2+1)} + \frac{Ds+E}{(s^2+1)^2}$

سؤال 3

صحيح

درجة 1.0 من 1.0

علم السؤال

If $F(s) = \frac{1}{s^2 + s + 5}$ is Laplace transform of a function $\mathcal{L}\{f(t)\}$ with $f(0) = 1$, then find



$$\frac{-s^2 - 5}{s^2 + s + 5} \quad \text{○}$$

none of the given answers is true ○

$$\frac{s^2 + 5}{s^2 + s + 5} \quad \text{○}$$

$$\frac{s^2 + 2s + 5}{s^2 + s + 5} \quad \text{○}$$

$$\frac{-s^2 + 2s - 5}{s^2 + s + 5} \quad \text{○}$$

الإجابة الصحيحة هي: $\frac{-s^2 - 5}{s^2 + s + 5}$

The inverse Laplace transform of the function

$$F(s) = \frac{s + 2}{s^2 - 2s + 10} \text{ is}$$

$$f(t) = -e^t \cos(3t) + e^t \sin(3t) \quad \text{○}$$

$$f(t) = -e^t \cos(3t) - e^t \sin(3t) \quad \text{○}$$

$$f(t) = e^t \cos(3t) - e^t \sin(3t) \quad \text{○}$$

none of the given answers is true ○



$$f(t) = e^t \cos(3t) + e^t \sin(3t) \quad \text{○}$$

الإجابة الصحيحة هي: $f(t) = e^t \cos(3t) + e^t \sin(3t)$

سؤال 4

صحيح

درجة 1.0 من 1.0

علم السؤال

Question 1

Correct

Mark 10 out of 10

Flag question

Find the Laplace transform of $f(t) = \sin(4t)$.

Select one:

☐ none of the given answers is true

☐ $F(s) = \frac{1}{s^2 + 16}$

☒ $F(s) = \frac{4}{s^2 + 16}$

☐ $F(s) = \frac{16}{s^2 + 16}$

☐ $F(s) = \frac{s}{s^2 + 16}$

The correct answer is: $F(s) = \frac{4}{s^2 + 16}$

Question 2

Correct

Mark 10 out of 10

Flag question

If $F(s)$ is the Laplace transform of a function $f(t)$ with $f(0) = 1$, $f'(0) = -4$, then find $\mathcal{L}\{f''(t)\}$.

Select one:

☒ $s^2 F(s) - s + 4$

☐ $s^2 F(s) - s - 4$

☐ $s^2 F(s) + s - 4$

☐ none of the given answers is true

☐ $s^2 F(s) + s + 4$

The correct answer is: $s^2 F(s) - s + 4$

Question 3

Correct

Mark 10 out of 10

Flag question

If $F(s) = \frac{1}{s^2 + 4s - 3}$ is the Laplace transform of a function $f(t)$ with $f(0) = 1$, then find $\mathcal{L}\{f'(t)\}$.

Select one:

☐ none of the given answers is true

☐ $\frac{-s^2 + 5s + 3}{s^2 + 4s - 3}$

☐ $\frac{s^2 + 5s - 3}{s^2 + 4s - 3}$

☐ $\frac{s^3 - 3s - 3}{s^2 + 4s - 3}$

☒ $\frac{-s^2 - 3s + 3}{s^2 + 4s - 3}$

The correct answer is: $\frac{-s^2 - 3s + 3}{s^2 + 4s - 3}$

Question 4
Correct
Mark 1.0 out of 1.0
Flag question

The inverse Laplace transform of the function $F(s) = \frac{s+6}{s^2+2s+26}$ is

Select one:

- ☒ $f(t) = e^{-t} \cos(5t) + e^{-t} \sin(5t)$
- ☐ $f(t) = e^{-t} \cos(5t) - e^{-t} \sin(5t)$
- ☐ none of the given answers is true
- ☐ $f(t) = -e^{-t} \cos(5t) + e^{-t} \sin(5t)$
- ☐ $f(t) = -e^{-t} \cos(5t) - e^{-t} \sin(5t)$

The correct answer is: $f(t) = e^{-t} \cos(5t) + e^{-t} \sin(5t)$

Question 5
Correct
Mark 1.0 out of 1.0
Flag question

Find the inverse Laplace transform $f(t)$ of the function $F(s) = \frac{5s^2+12}{s^2(s^2+4)}$.

Select one:

- ☐ $f(t) = -3t - \sin(2t)$
- ☒ $f(t) = 3t + \sin(2t)$
- ☐ none of the given answers is true
- ☐ $f(t) = 3t + 2\sin(2t)$
- ☐ $f(t) = -3t - 2\sin(2t)$

The correct answer is: $f(t) = 3t + \sin(2t)$

Question 6
Correct
Mark 1.0 out of 1.0
Flag question

The partial fraction decomposition of $\frac{s-4}{(s+4)(s^2+16)^2}$ has the form

Select one:

- ☒ $\frac{A}{(s+4)} + \frac{Bs+C}{(s^2+16)} + \frac{Ds+E}{(s^2+16)^2}$
- ☐ $\frac{A}{(s+4)} + \frac{B}{(s^2+16)} + \frac{C}{(s^2+16)^2}$
- ☐ none of the given answers is true
- ☐ $\frac{A}{(s+4)} + \frac{Bs+C}{(s^2+16)}$
- ☐ $\frac{A}{(s+4)} + \frac{Bs+C}{(s^2+16)^2}$

The correct answer is: $\frac{A}{(s+4)} + \frac{Bs+C}{(s^2+16)} + \frac{Ds+E}{(s^2+16)^2}$

Question 7
Correct
Mark 2.0 out of 2.0
Flag question

The Laplace transform $Y(s)$ of the solution of the initial value problem

$$y'' - y' + 2y = 0, \quad y(0) = -1, \quad y'(0) = 1$$

is

Select one:

- ☐ none of the given answers is true
- ☒ $Y(s) = \frac{-s+2}{s^2-s+2}$
- ☐ $Y(s) = \frac{s}{s^2-s+2}$
- ☐ $Y(s) = \frac{-s}{s^2-s+2}$
- ☐ $Y(s) = \frac{s-2}{s^2-s+2}$

The correct answer is: $Y(s) = \frac{-s+2}{s^2-s+2}$

Question 8
Correct
Mark 2.0 out of 2.0
Flag question

Find the Laplace transform $Y(s) = \mathcal{L}\{y(t)\}$ of the solution of the initial value problem

$$y''' + y'' + y' + y = 3 \cos(t), \quad y(0) = y'(0) = 0, \quad y''(0) = 2.$$

Select one:

- ☐ $Y(s) = \frac{-2s^2+3s+2}{(s^2+1)(s^3+s^2+s+1)}$
- ☐ $Y(s) = \frac{-2s^2+3s-2}{(s^2+1)(s^3+s^2+s+1)}$
- ☐ $Y(s) = \frac{2s^2+3s-2}{(s^2+1)(s^3+s^2+s+1)}$
- ☒ $Y(s) = \frac{2s^2+3s+2}{(s^2+1)(s^3+s^2+s+1)}$
- ☐ none of the given answers is true

The correct answer is: $Y(s) = \frac{2s^2+3s+2}{(s^2+1)(s^3+s^2+s+1)}$

Find the Laplace transform $Y(s) = \mathcal{L}\{y(t)\}$ of the solution of the initial value problem

$$y''' + y'' + y' + y = 5 \cos(t), \quad y(0) = y'(0) = 0, \quad y''(0) = 1.$$

✓

- $Y(s) = \frac{-s^2+5s-1}{(s^2+1)(s^3+s^2+s+1)}$ ☐
- $Y(s) = \frac{s^2+5s+1}{(s^2+1)(s^3+s^2+s+1)}$ ☒
- $Y(s) = \frac{s^2+5s-1}{(s^2+1)(s^3+s^2+s+1)}$ ☐
- none of the given answers is true ☐
- $Y(s) = \frac{-s^2+5s+1}{(s^2+1)(s^3+s^2+s+1)}$ ☐

الإجابة الصحيحة هي: $Y(s) = \frac{s^2+5s+1}{(s^2+1)(s^3+s^2+s+1)}$

سؤال 8
صحيح
درجة 2.0 من 2.0
علم السؤال

The Laplace transform $Y(s)$ of the solution of the initial value problem

$$y'' - 3y' + 3y = 0, \quad y(0) = -1, \quad y'(0) = -1$$

is

✓

- $Y(s) = \frac{-s+4}{s^2-3s+3}$ ☐
- none of the given answers is true ☐
- $Y(s) = \frac{s-2}{s^2-3s+3}$ ☐
- $Y(s) = \frac{-s+2}{s^2-3s+3}$ ☒
- $Y(s) = \frac{s-4}{s^2-3s+3}$ ☐

الإجابة الصحيحة هي: $Y(s) = \frac{-s+2}{s^2-3s+3}$

سؤال 7
صحيح
درجة 2.0 من 2.0
علم السؤال

سؤال 6

صحيح

درجة 1.0 من 1.0

٣ علم السؤال

The partial fraction decomposition of $\frac{s+16}{(s+1)^2(s^2+16)}$ has the form

$$\frac{A}{(s+1)} + \frac{Bs+C}{(s^2+16)} \quad \textcircled{\circ}$$

$$\frac{A}{(s+1)^2} + \frac{Bs+C}{(s^2+16)} \quad \textcircled{\circ}$$

$$\frac{A}{(s+1)} + \frac{B}{(s+1)^2} + \frac{C}{(s^2+16)} \quad \textcircled{\circ}$$

none of the given answers is true ☐

$$\frac{A}{(s+1)} + \frac{B}{(s+1)^2} + \frac{Cs+D}{(s^2+16)} \quad \textcircled{\bullet}$$

✓

الإجابة الصحيحة هي: $\frac{A}{(s+1)} + \frac{B}{(s+1)^2} + \frac{Cs+D}{(s^2+16)}$

سؤال 5

خطأ

درجة 0.0 من 1.0

٣ علم السؤال

$F(s) = \frac{-4s^2 + 4s - 80}{s(s^2 + 16)}$. Find the inverse Laplace transform $f(t)$ of the function

$$f(t) = -5 + \cos(4t) + \sin(4t) \quad \textcircled{\circ}$$

$$f(t) = 5 - \cos(4t) + \sin(4t) \quad \textcircled{\circ}$$

$$f(t) = 5 - \cos(4t) + 4 \sin(4t) \quad \textcircled{\circ}$$

none of the given answers is true ☐

$$f(t) = -5 + \cos(4t) + 4 \sin(4t) \quad \textcircled{\bullet}$$

✗

الإجابة الصحيحة هي: $f(t) = -5 + \cos(4t) + \sin(4t)$

سؤال 4

صحيح

درجة 1.0 من 1.0

٣ علم السؤال

The inverse Laplace transform of the function $F(s) = \frac{-s-7}{s^2+8s+25}$ is

$$f(t) = -e^{-4t} \cos(3t) + e^{-4t} \sin(3t) \quad \textcircled{\circ}$$

$$f(t) = e^{-4t} \cos(3t) - e^{-4t} \sin(3t) \quad \textcircled{\circ}$$

none of the given answers is true ☐

$$f(t) = e^{-4t} \cos(3t) + e^{-4t} \sin(3t) \quad \textcircled{\circ}$$

$$f(t) = -e^{-4t} \cos(3t) - e^{-4t} \sin(3t) \quad \textcircled{\bullet}$$

✓

الإجابة الصحيحة هي: $f(t) = -e^{-4t} \cos(3t) - e^{-4t} \sin(3t)$

سؤال 3

صحيح

درجة 1.0 من 1.0

٣ علم السؤال

. $\mathcal{L}\{f'(t)\}$ If $F(s) = \frac{1}{s^2+5s+1}$ is the Laplace transform of a function $f(t)$ with $f(0) = -1$, then find

$$\frac{s^2+6s+1}{s^2+5s+1} \quad \textcircled{\bullet}$$

$$\frac{s^2-4s-1}{s^2+5s+1} \quad \textcircled{\circ}$$

none of the given answers is true ☐

$$\frac{-s^2+6s+1}{s^2+5s+1} \quad \textcircled{\circ}$$

$$\frac{-s^2-4s-1}{s^2+5s+1} \quad \textcircled{\circ}$$

✓

الإجابة الصحيحة هي: $\frac{s^2+6s+1}{s^2+5s+1}$