PRINTABLE VERSION

Quiz 8

You scored 0 out of 100

Question 1

You did not answer the question.

Express the curve by an equation in x and y.

$$x(t) = t^2$$
$$y(t) = 3t + 5$$

a) $3y = (x+5)^2$

b) $9x = (y-5)^2$

c) $9y = (x-5)^2$

d) $x = \frac{1}{3}(y-5)^2$

e) $x = (y-5)^2 + 9$

Question 2

You did not answer the question.

Express the curve by an equation in x and y.

$$x(t) = 4\cos(t)$$
$$y(t) = 3\sin(t)$$

a) $9x^2 + 16y^2 = 12$

b) $9x^2 - 16y^2 = 12$

c) $16x^2 + 9y^2 = 144$

d) $16x^2 - 9y^2 = 144$

e) $9x^2 + 16y^2 = 144$

Question 3

You did not answer the question.

Express the curve by an equation in x and y.

$$x(t) = e^t$$
$$y(t) = 5 - e^{3t}$$

a) $y = 5 + x^3$, $x > 0$

b) $y = 5 - x^3$, $x > 0$

c) $x = 5 - y^3$, $x > 0$

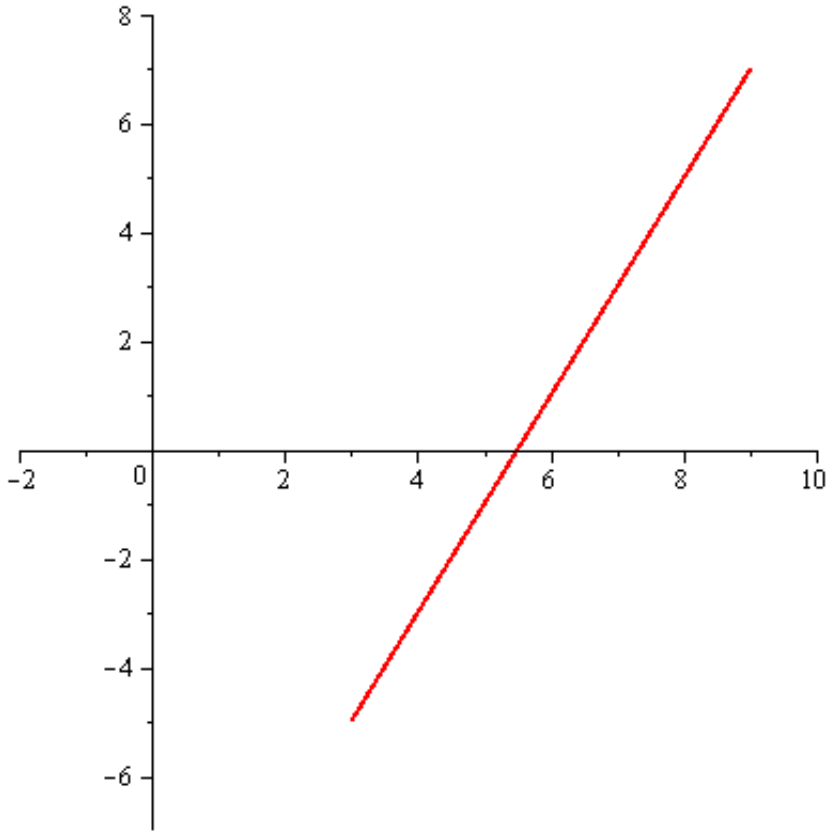
d) $x = 5 + y^3$, $x < 0$

e) $y = 5 + x^2$, $x < 0$

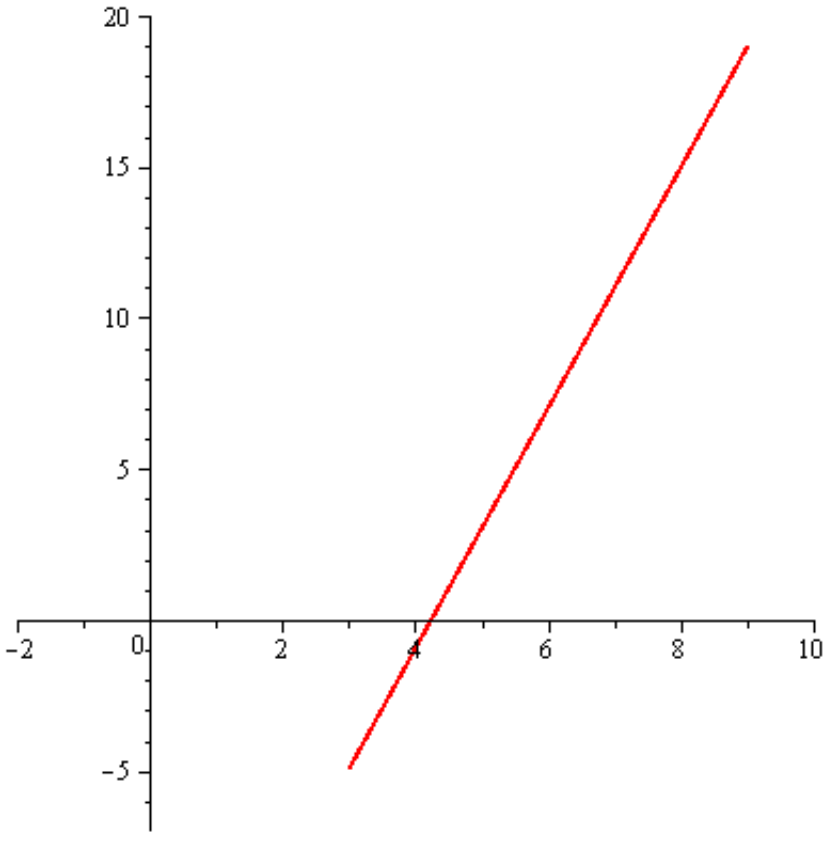
Question 4

You did not answer the question.

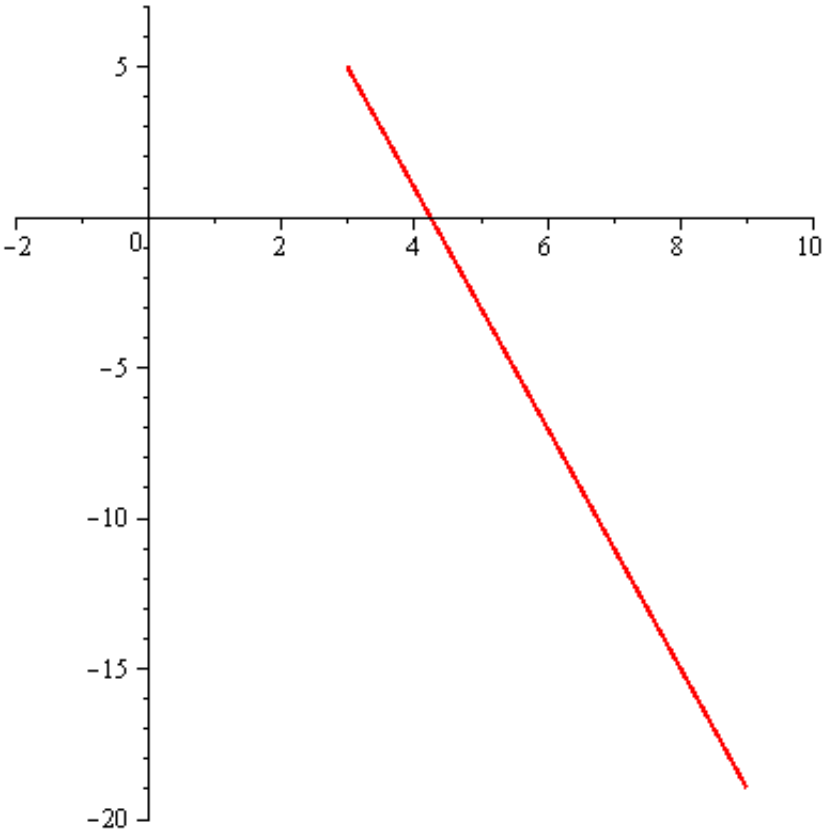
Express the curve by an equation in x and y and identify the correct sketch of the curve: $(3 + 3t, 5 - 6t)$, $0 \leq t \leq 2$.



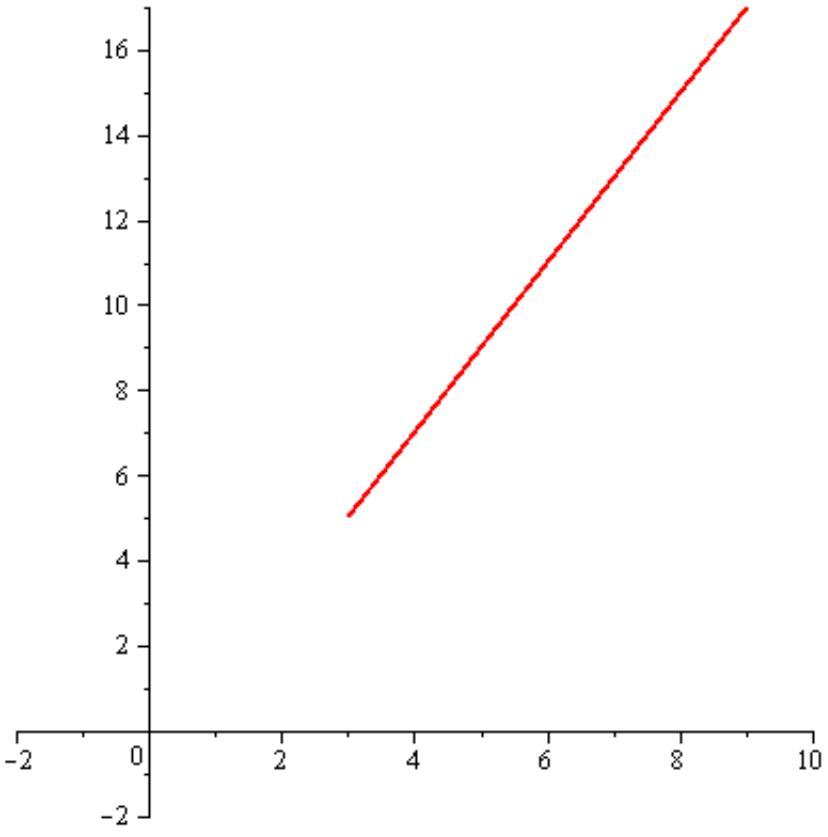
a) $y = -11 + 2\,x$;



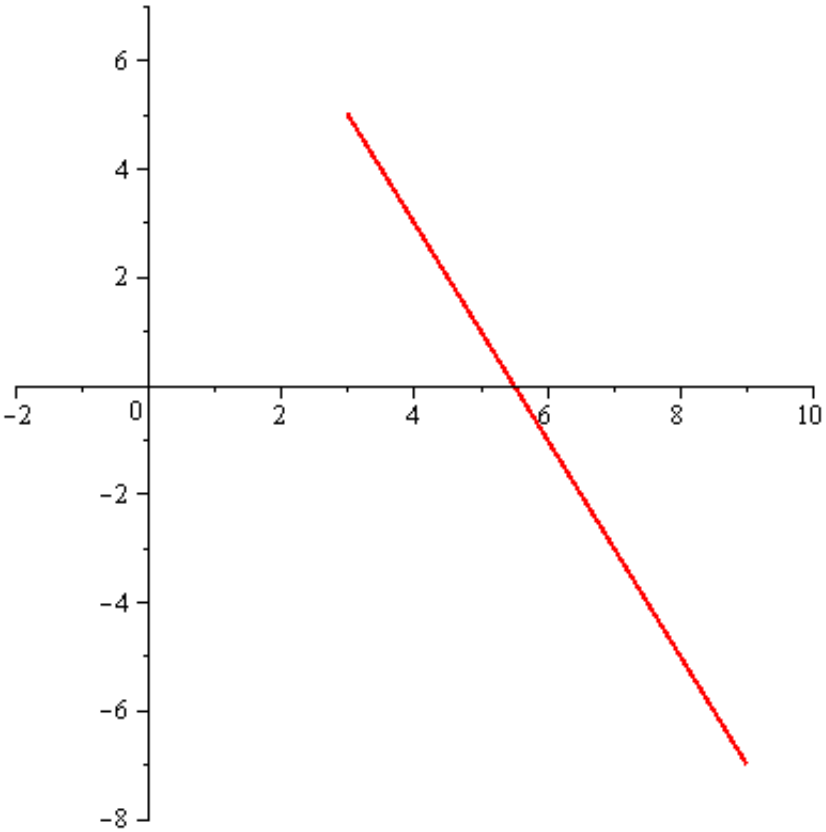
b) $y = -17 + 4\,x$;



c) $y = 17 - 4\,x$;



d) $y = -1 + 2\,x$;

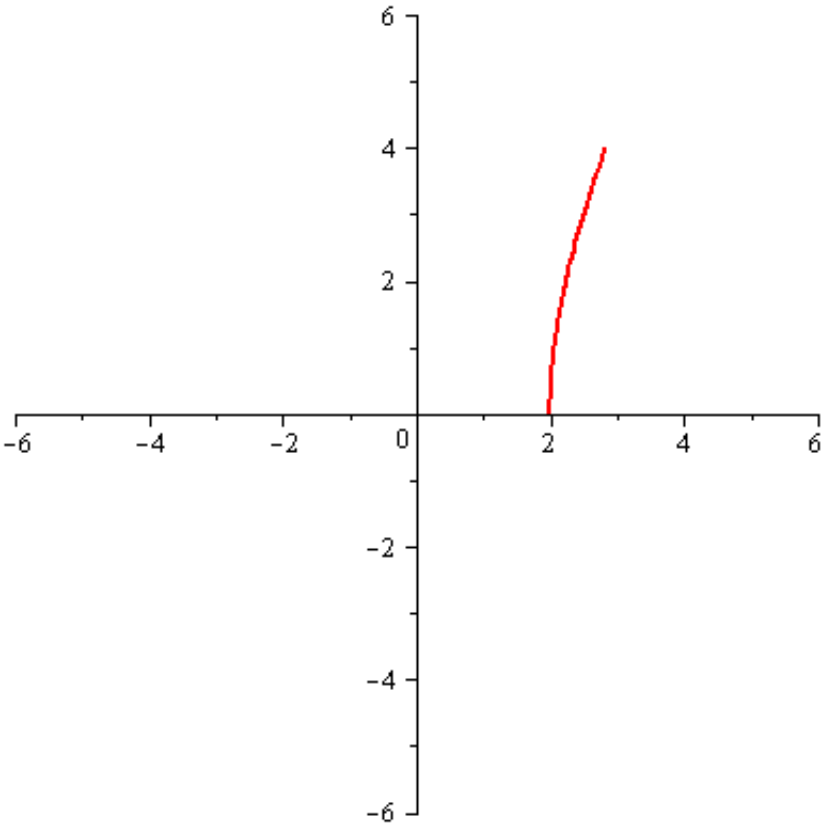


e) $y = 11 - 2x$;

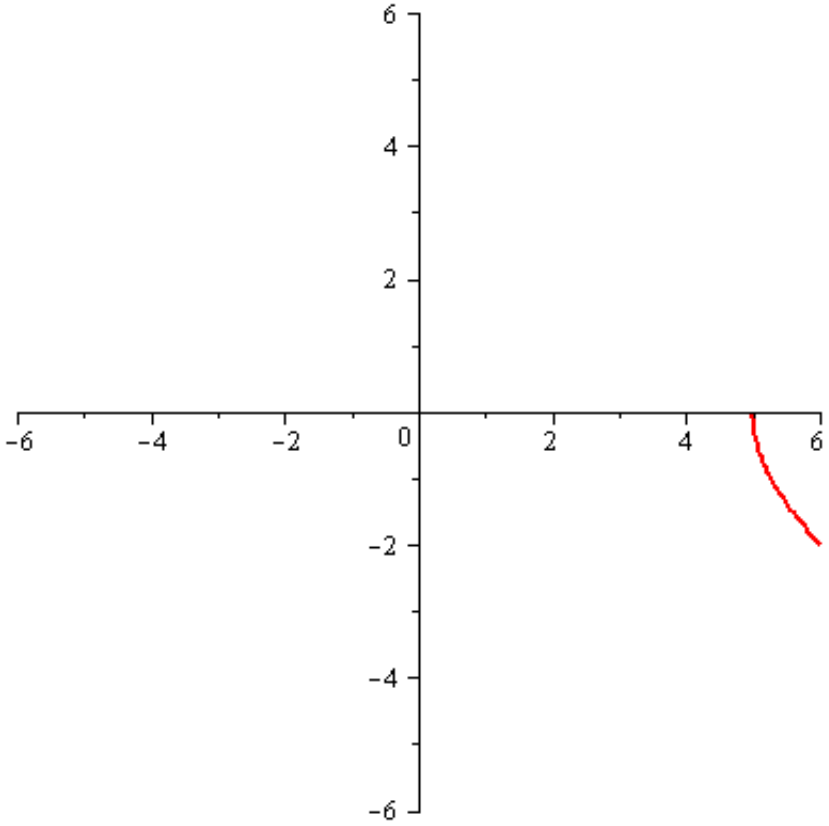
Question 5

You did not answer the question.

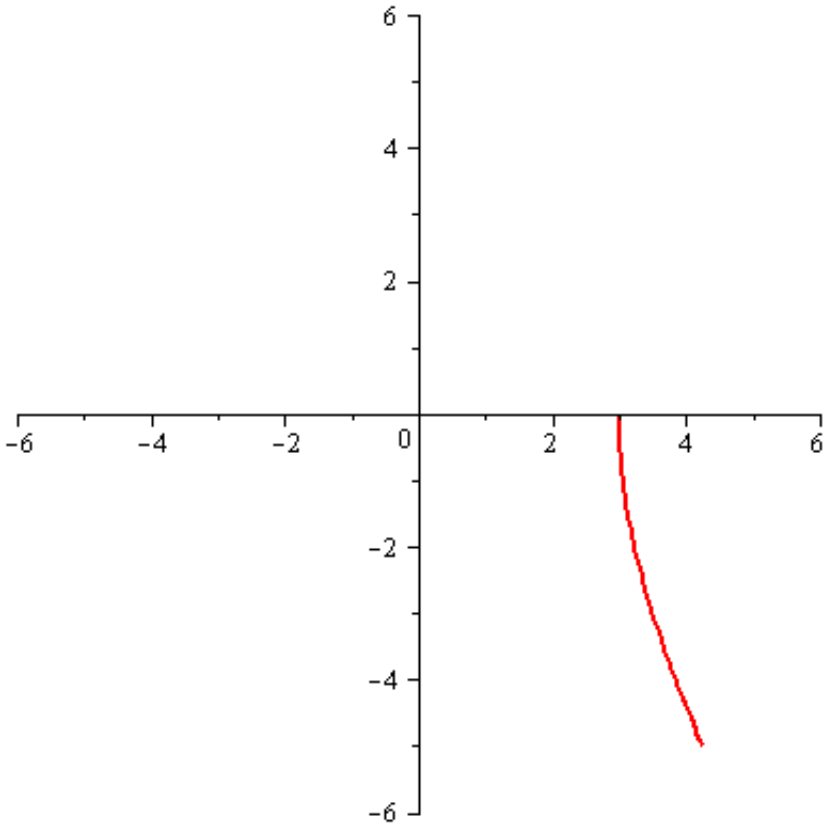
Express the curve by an equation in *x* and *y* and identify the correct sketch of the curve: $(3\sec(t), 5\tan(t))$, $0 \leq t \leq \frac{1}{4}\pi$.



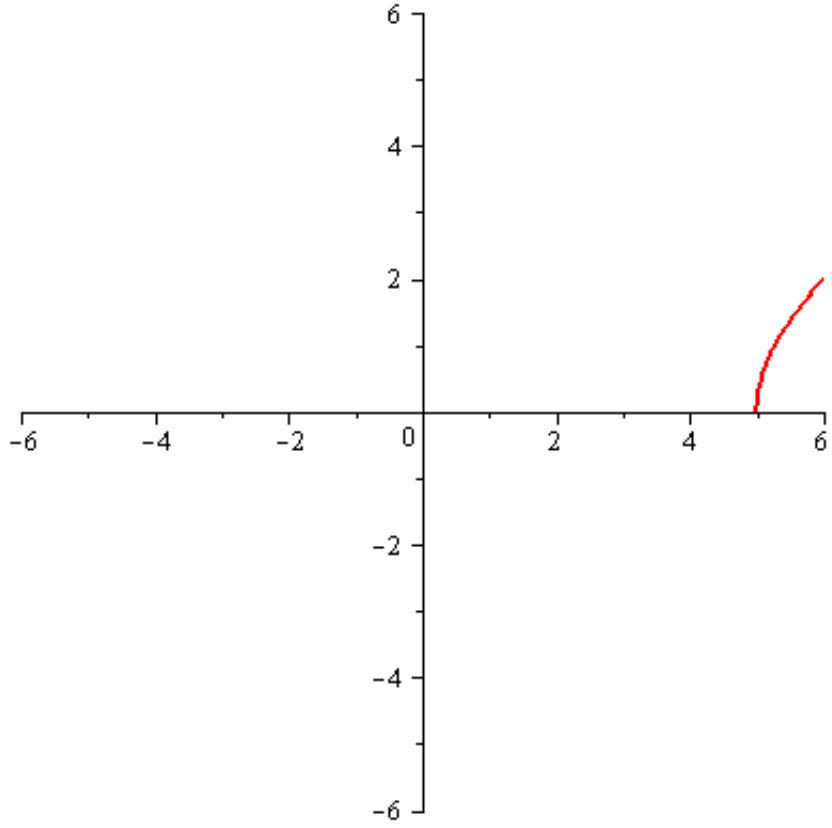
a) $1 + \frac{1}{25} y^2 = \frac{1}{9} x^2$;



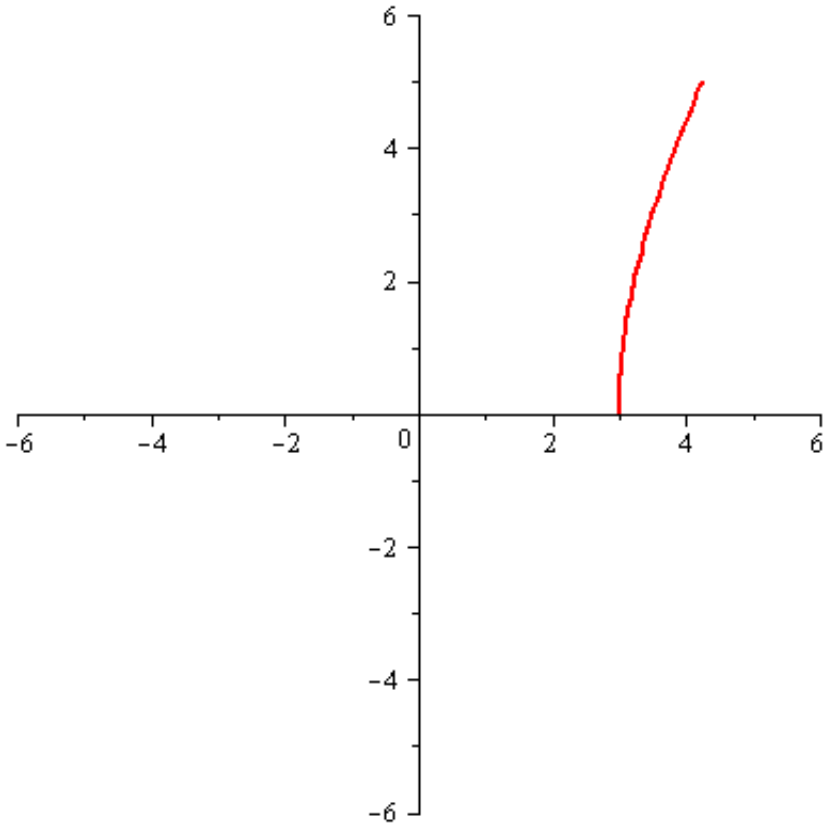
b) $1 + \frac{1}{9} y^2 = \frac{1}{25} x^2$;



c) $1 + \frac{1}{25} y^2 = \frac{1}{9} x^2$;



d) $1 + \frac{1}{9} y^2 = \frac{1}{25} x^2$;



e) $1 + \frac{1}{25} y^2 = \frac{1}{9} x^2$;

Question 6

You did not answer the question.

A particle with position given by the equations $x(t) = 7 \sin(2 \pi t)$, $y(t) = 7 \cos(2 \pi t)$, $t \in [0, 1]$ starts at the point (0, 7) and traverses the unit circle $x^2 + y^2 = 49$ once in a clockwise manner. Write equations of the form $x(t) = f(t)$, $y(t) = g(t)$, $t \in [0, 1]$ so that the particle begins at (0, 7) and traverses the circle once in a counterclockwise manner.

a) $x(t) = 7 \sin(2 \pi t)$, $y(t) = -7 \cos(2 \pi t)$

b) $x(t) = -7 \cos(2 \pi t)$, $y(t) = 7 \sin(2 \pi t)$

c) $x(t) = -7 \sin(2 \pi t)$, $y(t) = -7 \cos(2 \pi t)$

d) $x(t) = 7 \cos(2 \pi t)$, $y(t) = 7 \sin(2 \pi t)$

e) $x(t) = -7 \sin(2 \pi t)$, $y(t) = 7 \cos(2 \pi t)$

Question 7

You did not answer the question.

Find a parametrization $x = x(t)$, $y = y(t)$, $t \in [0, 1]$, for the line segment from (7, 9) to (4, 10).

a) $x(t) = 7 + 3t$, $y(t) = 9 - t$

b) $x(t) = 7 - 3t$, $y(t) = 9 + 2t$

c) $x(t) = 7 + 2t$, $y(t) = 9 + t$

d) $x(t) = 7 - t$, $y(t) = 9 + 3t$

e) $x(t) = 7 - 3t$, $y(t) = 9 + t$

Question 8

You did not answer the question.

Find an equation in x and y for the line tangent to the curve at $t = 3$.

$$x(t) = t - 2$$
$$y(t) = t^4$$

a) $108x + 459 + y = 0$

b) $27x + 135 - y = 0$

c) $-108x - 27 + y = 0$

d) $108x - 27 - y = 0$

e) $108x - 27 + y = 0$

Question 9

You did not answer the question.

Find an equation in x and y for the line tangent to the curve at $t = 3$.

$$x(t) = \frac{2}{t}$$
$$y(t) = t^2 - 2$$

a) $-6x + \frac{10}{3} = 0$

b) $3x - \frac{20}{9} = 0$

c) $2x + \frac{14}{9} = 0$

d) $6x - \frac{50}{9} + \frac{2}{9}y = 0$

e) $6x - \frac{43}{9} + \frac{1}{9}y = 0$

Question 10

You did not answer the question.

Find an equation in x and y for the line tangent to the polar curve at $\theta = \frac{1}{2}\pi$.

$$r = 11\cos(2\theta)$$

a) $x - 11 = 0$

b) $y + 11 = 0$

c) $y = 2x - 11$

d) $y = x + 11$

e) $y = -12$

Question 11

You did not answer the question.

Parametrize the curve by a pair of differentiable functions $x = x(t)$, $y = y(t)$ with $[x'(t)]^2 + [y'(t)]^2 \neq 0$, then determine the tangent line at the orgin.

$$y = -2x^3$$

a) $x(t) = -2t^3$, $y(t) = t$; tangent line $y = -1$

b) $x(t) = t$, $y(t) = -2t^3$; tangent line $y = 0$

c) $x(t) = t^2$, $y(t) = -2t^3$; tangent line $x = 0$

d) $x(t) = t$, $y(t) = -2t^3$; tangent line $x = 0$

e) $x(t) = -2t^3$, $y(t) = t$; tangent line $y = 0$

Question 12

You did not answer the question.

Find the points (x, y) at which the curve has a horizontal tangent.

$$x(t) = 5 - 2\sin(t)$$
$$y(t) = 5 + 6\cos(t)$$

a) $(5, 2)$ and $(2, 5)$

b) $(5, 3)$ and $(-2, -5)$

c) $(5, 11)$ and $(5, -1)$

d) $(4, -3)$ and $(3, 5)$

e) $(-4, 1)$ and $(4, 3)$

Question 13

You did not answer the question.

Find the points (x, y) at which the curve has a horizontal tangent.

$$x(t) = t^2 - 5t$$
$$y(t) = t^3 - 3t^2 - 24t$$

a) (28,14) and (-80,-4)

b) (-6,0) and (4,0)

c) (0,-6) and (0,4)

d) (14,28) and (-4,-80)

e) (5,0) and (-5,0)

Question 14

You did not answer the question.

Find the points (x, y) at which the curve has a vertical tangent.

$$x(t) = 2 - 3\sin(t)$$
$$y(t) = 2 + \cos(t)$$

a) $(2, 3)$ and $(3, 2)$

b) $(1, -4)$ and $(4, 2)$

c) $(2, 4)$ and $(-3, -2)$

d) $(-1, 2)$ and $(5, 0)$

e) $(-1, 2)$ and $(5, 2)$

Question 15

You did not answer the question.

Find the points (x, y) at which the curve has a vertical tangent.

$$x(t) = t^2 - 2t$$
$$y(t) = t^3 - 4t^2 + t$$

a) $(-1, -4)$

b) $(-1, -2)$

c) $\left(-\frac{1}{2}, -1\right)$

d) $(-2, -4)$

e) $(-2, -2)$

Question 16

You did not answer the question.

Find the length of the graph.

$$f(x) = 5x + 4$$
$$x \in [0, 2]$$

a) $6\sqrt{26}$

b) $2\sqrt{26}$

c) $3\sqrt{26}$

d) $4\sqrt{26}$

e) $\frac{4}{3}\sqrt{26}$

Question 17

You did not answer the question.

Find the length of the graph.

$$f(x) = \frac{1}{8}x^2 - \ln(x)$$
$$x \in [1, 5]$$

a) $2 + \frac{2}{3}\ln(5)$

b) $9 + 3\ln(5)$

c) $\frac{9}{2} + \frac{3}{2}\ln(5)$

d) $3 + \ln(5)$

e) $6 + 2\ln(5)$

Question 18

You did not answer the question.

The equations below give the position of a particle at each time t from $t = 0$ to $t = \pi$. Find the initial speed of the particle, the terminal speed, and the distance traveled.

$$x(t) = 10\,e^t \sin(t)$$
$$y(t) = 10\,e^t \cos(t)$$

a) initial speed = $20\sqrt{2}$, terminal speed = $20\sqrt{2}\,e^{\pi}$; distance traveled = $20\sqrt{2}\left(-1 + e^{\pi}\right)$

b) initial speed = $\frac{20}{3}\sqrt{2}$, terminal speed = $\frac{20}{3}\sqrt{2}\,e^{\pi}$; distance traveled = $10\sqrt{2}\left(-1 + e^{\pi}\right)$

c) initial speed = $10\sqrt{2}$, terminal speed = $10\sqrt{2}\,e^{\pi}$; distance traveled = $10\sqrt{2}\left(-1 + e^{\pi}\right)$

d) initial speed = $5\sqrt{2}$, terminal speed = $5\sqrt{2}\,e^{\pi}$; distance traveled = $5\sqrt{2}\left(-1+e^{\pi}\right)$

e) initial speed = $15\sqrt{2}$, terminal speed = $15\sqrt{2}\,e^{\pi}$; distance traveled = $10\sqrt{2}\left(-1+e^{\pi}\right)$

Question 19

You did not answer the question.

Find the length of $r=2$ from $\theta = 0$ to $\theta = 2\pi$.

a) 8π

b) 4π

c) $\frac{8}{3}\pi$

d) 12π

e) 6π

Question 20

You did not answer the question.

Find the length of $r=2+2\cos(\theta)$ from $\theta = 0$ to $\theta = \pi$.

a) 12

b) 24

c) $\frac{16}{3}$

d) 16

e) 8