MPE Sample Test

Question 1

For $x, y > 0$, $\sqrt{18\,x^3\,y^3}$ =

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a. $3x^2y^2\sqrt{2\,x\,y}$

b. $3xy\sqrt{x\,y}$

c. $3xy\sqrt{2\,x\,y}$

d. $9xy\sqrt{2\,x\,y}$

e. $9x^2y^2\sqrt{2\,x\,y}$

Question 2

$\left(x^3 + 2\,x^2 - 2\,x\right) - \left(2\,x^3 + 2\,x - 1\right)$ =

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a. $3\,x^3 + 2\,x^2 - 1$

b. $-x^3 + 2\,x^2 + 1$

c. $-x^3 + 2\,x^2 - 4\,x - 1$

d. $-x^3 + 2\,x^2 - 4\,x + 1$

e. $3\,x^3 + 2\,x^2 - 4\,x + 1$

Question 3

In a certain company, 1100 of the employees are men. What is the total number of employees if 5 out of every 11 employees are men?

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a. 484

b. 12 100

c. 2420

d. 1320

e. 20

Question 4

One of the factors of $2x^2 + 5x + 3$ is

a. $2x - 3$

b. Will not factor.

c. $x + 1$

d. $2x^2$

e. $x - 1$

Question 5

The positive solution of the equation $x^2 + 5 = 19$ lies between

a. 6 and 7.

b. 4 and 5.

c. 5 and 6.

d. 2 and 3.

e. 3 and 4.

Question 6

A customer redeemed 25 coupons, some worth 50 ¢ and some worth 35 ¢, for a total of $ 10.10. If x represents the number of 50 ¢ coupons redeemed, which of the following equations would be used to correctly solve for x?

a. $25\,(50 - x) + 25\,(35 - x) = 1010$

b. $0.5x + 0.35\,(25 - x) = 1010$

c. $50x + 35\,(25 - x) = 1010$

d. $50x + 35\,(25 - x) = 10.1$

e. $35x + 50\,(25 - x) = 1010$

Question 7

$\left(3x^3y\right)\left(-x^2y^3\right)^3 =$

a. $-3x^9y^{10}$

b. $-3x^5y^{10}$

c. $-3x^8y^7$

d. $-3x^9y^9$

e. $3x^9y^{10}$

Question 8

$2(3-(3-5)) =$

a. 22

b. 10

c. -2

d. -10

e. 8

Question 9

Solve $6x + 10 \geq -2$ for x.

a. $x \leq -2$

b. $x \geq -\frac{11}{3}$

c. $x \in (-\infty, \infty)$

d. $x \geq -2$

e. $x \geq 2$

Question 10

The length L of a spring is given by $L = \frac{5}{4}F + 1$,
where F is the applied force. What force F will produce a length of 15?

a. $\frac{59}{5}$

b. $\frac{35}{2}$

c. $\frac{56}{5}$

d. $\frac{79}{4}$

e. $\frac{64}{5}$

Question 11

If $x + 6 = 4x + 5$, then $x = ?$

a. $\frac{11}{3}$

b. $\frac{1}{5}$

c. $-\frac{11}{3}$

d. $\frac{1}{3}$

e. $-\frac{1}{5}$

Question 12

Find the y - coordinate of the point on the graph of
$8x + 4y + 1 = 0$ with an x - coordinate of 3.

a. $-\frac{13}{8}$

b. 6

c. -7

d. $-\frac{23}{4}$

e. $-\frac{25}{4}$

Question 13

$3x - 3(x - 4) + (y - 4) =$

a. $6x + y - 16$

b. $y - 16$

c. $16 - y$

d. $y + 16$

e. $y + 8$

Question 14

If $6(y - 3) = -3(x + 1)$, then $y = ?$

a. $\frac{1}{6}(4 - 3x)$

b. $-\frac{x}{2}$

c. $\frac{5 - x}{2}$

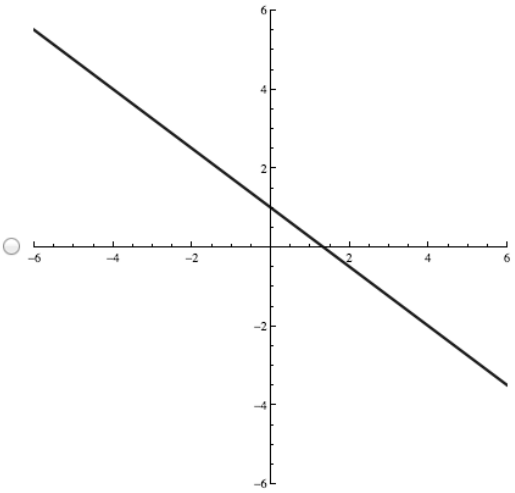
d. $\frac{1}{6}(19 - 3x)$

e. $5 - 2y$

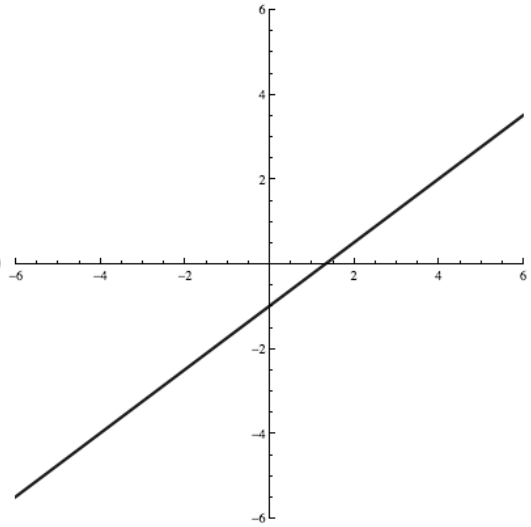
Question 15

Graph $-4y - 3x = 4$.

a.



b.



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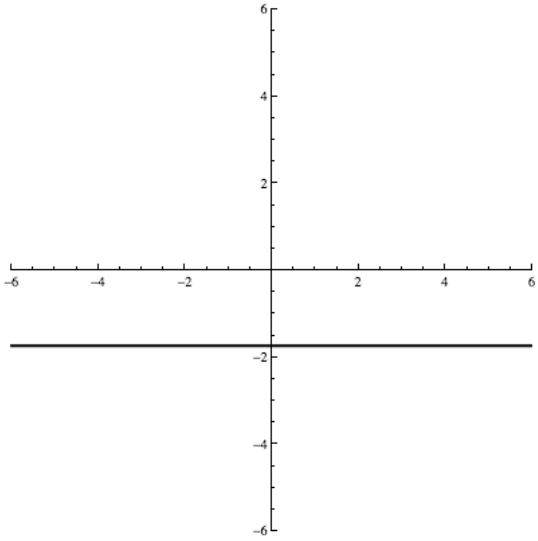

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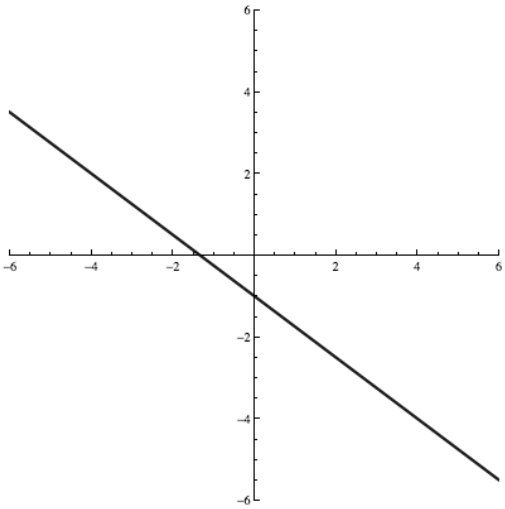
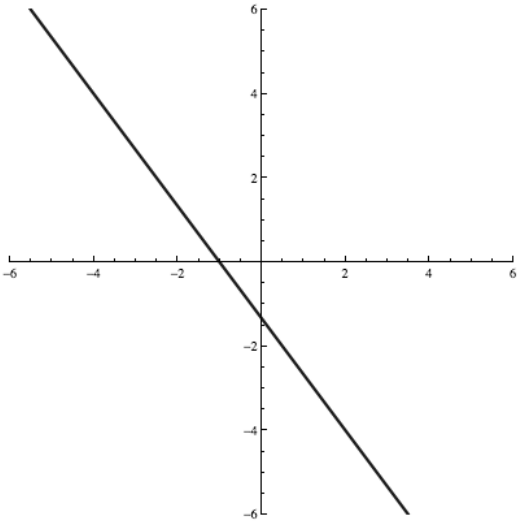


e.



Question 16

What is the complete set of values of x that may not be used in the expression $\frac{x - 2}{x^2 + 6x}$?

a. $\{-6, 0\}$

b. $\{-6, 6\}$

c. $\{0\}$

d. $\{2\}$

e. $\{-6\}$

Question 17

For $x > 0$, $\sqrt{121x} - \sqrt{25x} =$

a. $116\sqrt{x}$

b. $\sqrt{6}\sqrt{x}$

c. $16\sqrt{x}$

d. $-14\sqrt{x}$

e. $6\sqrt{x}$

Question 18

$\frac{3}{x + 2} - \frac{8}{x^2 - 4} =$

a. $\frac{8}{x^2 - 4} + \frac{3(x - 2)}{(x + 2)^2}$

b. $\frac{3x - 14}{x^2 - 4}$

c. $\frac{3x + 2}{x^2 - 4}$

d. $\frac{3x - 2}{x^2 - 4}$

e. $\frac{3x + 14}{x^2 - 4}$

Question 19

$$\frac{x^{-3}\,y^{-1}}{x^{3}\,y^{-1}} =$$

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a. $\frac{1}{x^6}$

b. $\frac{1}{y^2}$

c. 1

d. $\frac{x^9}{y}$

e. $\frac{1}{x^6\,y^2}$

Question 20

$$\frac{x^2-49}{x^2+14\,x+49} =$$

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a. $-\frac{1}{14\,x}$

b. $\frac{x+7}{x-7}$

c. 0

d. $-\frac{7}{2\,x+7}$

e. $\frac{x-7}{x+7}$

Question 21

If $1+\frac{7}{x} = \frac{8\,x+5}{x}$, then x = ?

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a. $\left\{\frac{2}{7}\right\}$

b. No solution.

c. $\left\{0, \frac{2}{7}\right\}$

d. $\left\{\frac{3}{8}\right\}$

e. $\left\{-\frac{1}{4}, \frac{1}{2}\right\}$

Question 22

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

a. $12x^2 + 48xy + 8y^2$

b. $36x^2 + 16y^2$

c. $36x^2 + 48xy - 16y^2$

d. $36x^2 - 48xy + 16y^2$

e. $36x^2 + 48xy + 16y^2$

Question 23

If $f(x) = -3x^2 - 4x + 1$, then $f(2) = ?$

a. -3

b. -19

c. -21

d. 5

e. $2\left(-3x^2 - 4x + 1\right)$

Question 24

In the solution for the system of equations $\{x - 3y = 1, x - 2y = 4\}$, the x - value is ?

a. 2

b. -2

c. 10

d. $\frac{14}{5}$

e. -14

Question 25

If $x = -2$ and $y = 3$, then $x^2 y^3 - \frac{2x}{3y} = ?$

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a. $-\frac{69\,980}{9}$

b. 112

c. $\frac{968}{9}$

d. $\frac{15\,556}{9}$

e. $\frac{976}{9}$