

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Perform the indicated operation and simplify.

1)  $\frac{m^2 - 10m}{m - 6} + \frac{24}{m - 6} = \frac{m^2 - 10m + 24}{m - 6} = \frac{(m-4)(m-6)}{m-6} = m-4$

1) C

A)  $m + 4$

B)  $\frac{m^2 - 10m + 24}{m - 6}$

C)  $m - 4$

D)  $m - 6$

Solve the equation.

2)  $\frac{x+4}{5} = \frac{x+5}{6} \Rightarrow 6(x+4) = 5(x+5) \Rightarrow 6x+24 = 5x+25 \Rightarrow -5x-24 = -5x-24 \Rightarrow x=1$

2) C

A)  $\frac{1}{30}$

B)  $\frac{9}{11}$

C) 1

D)  $\frac{3}{10}$

3)  $\frac{4x-5}{3} = \frac{4x+4}{2}$

3) C

$2(4x-5) = 3(4x+4)$   
 $8x-10 = 12x+12$   
 $-8x-12 = -8x-12$   


---

 $-22 = 4x$   
 $\frac{-22}{4} = \frac{4x}{4}$   
 $x = -\frac{11}{2}$

A)  $-\frac{1}{2}$

B)  $\frac{11}{10}$

C)  $-\frac{11}{2}$

D)  $\frac{1}{10}$

4)  $7y - 3 = 9 + 10y \Rightarrow -12 = 3y \Rightarrow y = -4$

4) A

A) -4

B)  $-\frac{1}{4}$

C)  $\frac{1}{4}$

D)  $\frac{17}{6}$

5)  $\frac{2}{t} = \frac{t}{2t+6}$

5) B

$t^2 = 2(2t+6)$   
 $t^2 = 4t + 12$   
 $-4t - 12 = -4t - 12$   


---

 $t^2 - 4t - 12 = 0$

$(t-6)(t+2) = 0$

$t-6=0$	$t+2=0$
$\frac{t-6}{+6} = \frac{0}{+6}$	$\frac{t+2}{-2} = \frac{0}{-2}$
$t=6$	$t=-2$

No domain concerns with these values.

A)  $0, -\frac{6}{2}$

B) 6, -2

C) 0, 4

D) No solution

$$\begin{aligned} 5(x+4) &= 4(x+12) \\ 5x+20 &= 4x+48 \\ -4x-20 & \quad -4x-20 \\ \hline x &= 28 \end{aligned}$$

$$6) \frac{4}{5} = \frac{x+4}{x+12}$$

A) 28

B) 7

C)  $\frac{28}{9}$

D) 16

6) A

$$7) 9 = 7x - 5 \quad \frac{14}{7} = \frac{7x}{7} \quad x = 2$$

A) 11

B) 2

C) 6

D) 7

7) B

$$8) 3(3x-1) = 12 \rightarrow 9x - 3 = 12 \rightarrow 9x = 15 \rightarrow x = \frac{5}{3}$$

A)  $\frac{5}{3}$

B) 1

C)  $\frac{13}{9}$

D)  $\frac{11}{9}$

8) A

Multiply. Write the answer in lowest terms.

$$9) \frac{2x^2 \cdot 28}{24 \cdot x^3} = \frac{14}{x}$$

A)  $\frac{x}{14}$

B)  $\frac{56x^2}{4x^3}$

C)  $\frac{14}{x}$

D)  $\frac{14x^2}{x^3}$

9) C

$$10) \frac{k^2+6k+8}{k^2+10k+16} \cdot \frac{k^2+8k}{k^2-5k-36} = \frac{(k+4)(k+2)}{(k+8)(k+2)} \cdot \frac{k(k+8)}{(k-9)(k+4)} = \frac{k}{k-9}$$

A)  $\frac{k^2+8k}{k-9}$

B)  $\frac{k}{k^2+10k+16}$

C)  $\frac{1}{k-9}$

D)  $\frac{k}{k-9}$

10) D

$$11) \frac{t-7}{t^2-2t-8} \cdot \frac{t+2}{t^2-8t+7}$$

$$\frac{(t-7)}{(t-4)(t+2)} \cdot \frac{t+2}{(t-7)(t-1)} = \frac{1}{(t-4)(t-1)}$$

A)  $-\frac{1}{4(t+1)}$

B)  $\frac{(t-7)}{(t-4)(t-1)(t+7)}$

C)  $\frac{1}{(t-4)(t-1)}$

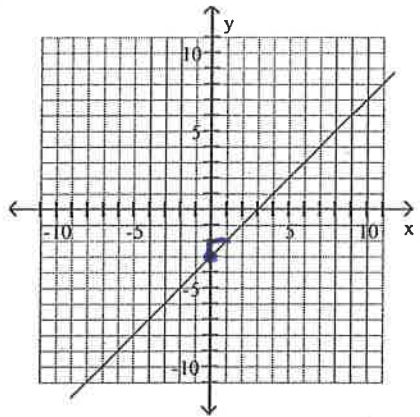
D)  $\frac{t}{(t+4)(t+1)}$

11) C

Use the geometric interpretation of slope (rise divided by run) to find the slope of the line. Then, by identifying the y-intercept from the graph, write the slope-intercept form of the equation of the line.

12)

12) D



$m=1$   
 $b=-3$

A)  $y = x + 3$

B)  $y = -x - 3$

C)  $y = -x + 3$

D)  $y = x - 3$

Perform the indicated operation and simplify.

13)  $\frac{4}{z^2} - \frac{6z}{z \cdot z} = \frac{4-6z}{z^2} = \frac{2(2-3z)}{z^2}$

13) C

A)  $\frac{2(2+3z)}{z^2}$

B)  $\frac{2(3z-2)}{z}$

C)  $\frac{2(2-3z)}{z^2}$

D)  $\frac{2(2z+3)}{z^2}$

14)  $\frac{5}{r} + \frac{8}{r+6} = \frac{5(r+6) + 8r}{r(r+6)}$   
 $= \frac{5r + 30 + 8r}{r(r+6)}$   
 $= \frac{13r + 30}{r(r+6)}$

14) B

A)  $\frac{13r+30}{r(-6-r)}$

B)  $\frac{13r+30}{r(r+6)}$

C)  $\frac{-30r-13}{r(r+6)}$

D)  $\frac{-30r-13}{r(-6-r)}$

Find the slope of the line through the pair of points.

$m = \frac{y_1 - y_2}{x_1 - x_2} = \frac{0 - 5}{-8 - 0} = \frac{-5}{-8} = \frac{5}{8}$

15) (-8, 0) and (0, 5)

15) A

A)  $\frac{5}{8}$

B)  $\frac{8}{5}$

C)  $-\frac{8}{5}$

D)  $-\frac{5}{8}$

Write the rational expression in lowest terms.

16)  $\frac{6x+18}{8x+24} = \frac{3 \cdot 6(x+3)}{4 \cdot 8(x+3)} = \frac{3}{4}$

16) A

A)  $\frac{3}{4}$

B)  $\frac{4}{3}$

C) 3

D) 1

$$17) \frac{a^2 - 8a}{(a+5)(a-8)} = \frac{a(a-8)}{(a+5)(a-8)} = \frac{a}{a+5}$$

17) D

A)  $\frac{1}{a+5}$

B)  $\frac{a-8}{a+5}$

C)  $\frac{a^2}{a+5}$

D)  $\frac{a}{a+5}$

Find the product.

$$18) (2x-4)(2x+4) = 4x^2 + 8x - 8x - 16 = 4x^2 - 16$$

18) A

A)  $4x^2 - 16$

B)  $2x^2 + 16x - 16$

C)  $4x^2 - 16x - 16$

D)  $4x^2 + 16x - 16$

$$19) (2x+1)(x+11) = 2x^2 + 22x + x + 11 = 2x^2 + 23x + 11$$

19) B

A)  $2x^2 + 21x + 11$

B)  $2x^2 + 23x + 11$

C)  $2x^2 + 11x + 23$

D)  $2x^2 + 23x + 23$

Add or subtract. Write the answer in lowest terms.

$$20) \frac{6}{x-4} + \frac{9}{4-x}$$

20) B

$$\frac{6}{x-4} + \frac{9}{-(x-4)}$$

$$\frac{6}{x-4} - \frac{9}{x-4} = \frac{-3}{x-4}$$

A)  $\frac{3}{x-4}$

B)  $\frac{-3}{x-4}$

C)  $\frac{54}{x-4}$

D)  $\frac{15}{x-4}$

Write an equation, in slope-intercept form if possible, of the line through the pair of points.

21) (8, -4) and (0, 5)

21) C

$$m = \frac{y_1 - y_2}{x_1 - x_2}$$

$$b = 5$$

$$m = \frac{-4 - 5}{8 - 0}$$

$$y = -\frac{9}{8}x + 5$$

$$m = -\frac{9}{8}$$

A)  $y = -\frac{12}{5}x + 5$

B)  $y = \frac{9}{8}x + 5$

C)  $y = -\frac{9}{8}x + 5$

D)  $y = \frac{12}{5}x + 5$

22) (2, -9) and (-4, -9)

$$m = \frac{-9 - (-9)}{2 - (-4)} = \frac{0}{6} = 0$$

$$y - y_1 = m(x - x_1)$$

$$y - (-9) = 0(x - 2) \\ y + 9 = 0 \rightarrow y = -9$$

22) C

A)  $-4x + 2y = 0$

B)  $x = 2$

C)  $y = -9$

D)  $2x - 4y = 0$

Simplify the expression by combining like terms.

$$23) -8(3r + 10) + 2(6r + 10)$$

23) C

A)  $-104r$

B)  $-12r + 10$

C)  $-12r - 60$

D)  $-5r + 2$

$$\begin{aligned} & \underline{-24r - 80} + \underline{12r + 20} \\ & \underline{-12r - 60} \end{aligned}$$

24)  $15r + 7(6 - 6r) = \underline{15r + 42 - 42r} = -27r + 42$

A)  $27r - 42$

B)  $57r - 42$

C)  $-27r + 42$

D)  $9r + 42$

24) C

Factor completely.

25)  $7x^2 - 7x - 42 = 7(x^2 - x - 6) = 7(x-3)(x+2)$

A)  $(7x + 14)(x - 3)$

B) Prime

C)  $7(x + 2)(x - 3)$

D)  $7(x - 2)(x + 3)$

25) C

26)  $x^2 - x - 40$

A)  $(x + 5)(x - 8)$

B)  $(x - 40)(x + 1)$

C) Prime

D)  $(x - 5)(x + 8)$

26) C

Find the intercepts for the graph of the equation.

27)  $2x + y = -10$

A)  $(0, -4); (8, 0)$

B)  $(4, 0); (0, 8)$

C)  $(-5, 0); (0, -10)$

D)  $(0, 0); (-4, -8)$

27) C

Simplify the complex fraction.

28)  $\frac{\frac{1}{a} + 1}{\frac{1}{a} - 1} = \frac{1+a}{1-a}$

A)  $\frac{1+a}{1-a}$

B) 1

C)  $1 - a^2$

D)  $\frac{a}{1-a^2}$

28) A

29)  $\frac{\frac{9}{y}}{\frac{6}{y+3}} = \frac{9(y+3)}{6y} = \frac{3(y+3)}{2y}$

A)  $\frac{2y}{3(y+3)}$

B)  $\frac{3(y+3)}{2y}$

C)  $54y(y+3)$

D)  $\frac{y+3}{54y}$

29) B