Directions: Choose the **one best** answer for each item.

1. Evaluate, given k = -3, m = -2, and n = 5 $\dfrac{k^2-m^2}{3n^2}$

a) $\dfrac{3}{4}$ b) -4 c) $\dfrac{-1}{15}$ d) $\dfrac{1}{15}$

2. The sum of two integers is 64. One integer is 20 less than twice the other. Find the smaller integer.

a) 20 b) 30 c) 36 d) 28

3. $-4(m+1)-3 \le 2m-5(m-2)$

a) $m \le 17$ b) $m \ge 17$ c) $m \le -17$ d) $m \ge -17$

4. Simplify: $\dfrac{(3r)^2 \cdot r^6}{r^{-5} \cdot r^{-1}}$

a) $3r^{14}$ b) $3r^2$ c) $9r^{14}$ d) $9r^2$

5. Solve: $|3k+1| = |4k-7|$

a) $-8, \dfrac{-6}{7}$ b) $8, \dfrac{-6}{7}$ c) $8, \dfrac{6}{7}$ d) $-8, \dfrac{6}{7}$

6. Solve. Answer in interval notation. $|1+4z| > 3$

a) $\left(-1, \dfrac{1}{2}\right)$ b) $(-\infty,-1) \cup \left(\dfrac{1}{2}, \infty\right)$ c) $\left(\dfrac{1}{2}, \infty\right)$ d) $\left(\dfrac{1}{2}, 1\right)$

7. Simplify: $(4q-3)(2q^2+q-5)$

a) $14q^3+q^2-20q+15$ b) $8q^3-10q^2+17q+15$

c) $8q^3-2q^2-23q+15$ d) $8q^3-2q^2-17q+15$

8. Factor completely: $36r^{2k}-25$

a) $(6r^k+5)^2$ b) $(6r^k-5)^2$ c) $(6r^k+5)(6r^k-5)$ d) prime

9. Factor completely: $27m^6-p^9$

a) $(3m^2+p^3)(9m^4-3m^2p^3+p^6)$ b) $(3m^2-p^3)(9m^4+3m^2p^3+p^6)$

c) $(3m^2-p^3)(9m^4+6m^2p^3+p^6)$ d) prime

10. Solve: $25y^2-10y=0$

a) 0 only b) $\frac{2}{5}$ only c) $0, \frac{2}{5}, \frac{-2}{5}$ d) $\frac{2}{5}$, 0

11. Find the values of *p* for which the expression is undefined: $\frac{2p-3}{p^2-3p-10}$

a) $\frac{3}{2}$ b) 5 c) 5, -2 d) none

12. Given the set **A** = $\left\{ 0.7,\ -\frac{1}{8},\ 0,\ \sqrt{9},\ \sqrt{10},\ \pi,\ \frac{12}{3},\ -5,\ 2\frac{1}{2} \right\}$

Choose which of the following lists <u>all</u> the integers in set A.

a) $\left\{ \sqrt{10},\ \sqrt{9},\ \pi \right\}$ b) $\left\{ 0,\ 0.7,\ -\frac{1}{8},\ \frac{12}{3},\ -5,\ 2\frac{1}{2} \right\}$

c) $\left\{ 0,\ \sqrt{9},\ \frac{12}{3},\ -5 \right\}$ d) $\left\{ 0.7,\ -\frac{1}{8},\ 0,\ \sqrt{9},\ \frac{12}{3},\ -5,\ 2\frac{1}{2} \right\}$

13. Simplify: $\frac{5}{3k+6}-\frac{2}{k^2-4}$

a) $\frac{5k-4}{3(k+2)(k-2)}$

b) $\frac{5k-16}{3(k+2)(k-2)}$

c) $\frac{5k-4}{(k+2)(k-2)}$

d) $\frac{3}{k^2+3k+2}$

14. Simplify: $\frac{\frac{1}{p-1}-\frac{1}{p}}{\frac{2}{p}-\frac{2}{p+1}}$

a) $\frac{p}{2}$

b) $\frac{p+1}{2(p-1)(p+1)}$

c) $\frac{p}{2(p-1)}$

d) $\frac{p+1}{2(p-1)}$

15. Divide: $x^3-5x-12$ by $x-3$.

a) x^2+3x-4

b) x^2+3x+4

c) x^2-3x-4

d) x^2-3x+4

16. Solve: $\frac{8}{x^2-4x+3}-\frac{x}{x-1}=\frac{4}{x-3}$

a) 3, -4

b) 3, 1

c) -4

d) 4, 3

17. Solve for *y*: $\frac{3}{r}-\frac{2}{y}=\frac{1}{6}$

a) $2\left(\frac{r}{3}-\frac{1}{6}\right)$

b) $\frac{r}{3}-\frac{1}{6}$

c) $\frac{12r}{r-18}$

d) $\frac{12r}{18-r}$

18. Jo can do a job in 4 hours, while Gloria needs 5 hours. How long would the job take if they worked together?

a) $\frac{20}{9}$ hours

b) $\frac{9}{20}$ hours

c) $4\frac{1}{2}$ hours

d) 9 hours

19. Simplify and express with only positive exponents: $\left(\dfrac{p^{-4}\cdot p^{\frac{1}{2}}}{p^{\frac{-3}{2}}\cdot p^{2}}\right)^{-\frac{1}{2}}$

a) $\dfrac{1}{p^2}$ b) p^2 c) $p^{\frac{1}{2}}$ d) p^8

20. Simplify completely: $\sqrt[3]{16k^7m^9}$

a) $2km^3\sqrt[3]{2k^4}$ b) $k^2m^3\sqrt[3]{16k}$ c) $2k^2m^2\sqrt[3]{2km^3}$ d) $2k^2m^3\sqrt[3]{2k}$

21. Simplify: $\left(5\sqrt{3}-2\sqrt{2}\right)^2$

a) 67 b) $67-20\sqrt{6}$ c) 83 d) $83-20\sqrt{6}$

22. Find the slope and *y*-intercept of $2x-\dfrac{3}{4}y=1$. Use m for the slope and b for the *y*-intercept.

a) m = $-\dfrac{4}{3}$, b = $\dfrac{8}{3}$ b) m = 1, b = -1 c) m = $\dfrac{8}{3}$, b = $-\dfrac{4}{3}$ d) m = $\dfrac{3}{4}$, b = 1

23. Rationalize the denominator: $\dfrac{4}{\sqrt{5}-3}$

a) $-\sqrt{5}+3$ b) $-\sqrt{5}-3$ c) $\dfrac{2\left(\sqrt{5}+3\right)}{11}$ d) $2\sqrt{5}+6$

24. Solve $p=\sqrt{3p+10}$

a) -2, 5 b) -2 c) 5 d) No solution

25. Given the polynomial $P(x)=3x^2-2x+1$, find $P(-2)$.

a) 9 b) 41 c) 17 d) 33

26. Pat found a bag that had 29 coins consisting of dimes and quarters worth $4.70. How many quarters were in the bag?

a) 12 b) 17 c) 18 d) 16

27. Find the distance between (-4, 3) and (2, -3).

a) $2\sqrt{10}$ b) $6\sqrt{2}$ c) $4\sqrt{2}$ d) 6

28. Evaluate the following: $4+7\cdot 2-3^2+|2-7|$

a) 8 b) 14 c) 18 d) 4

29. Solve: $5x^2-10x+1=0$

a) $\frac{5\pm 2\sqrt{30}}{5}$ b) $\frac{5\pm 2\sqrt{5}}{5}$ c) 1 d) $\frac{1\pm 2\sqrt{5}}{5}$

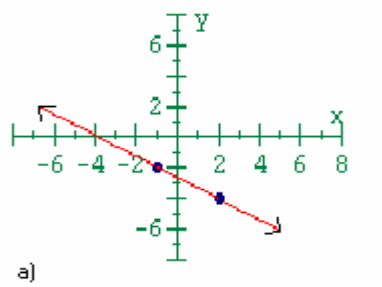
30. Solve: $3x^2-11x-20=0$

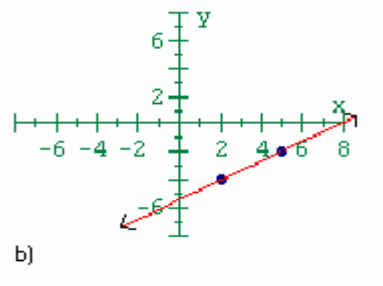
a) $\frac{11\pm i\sqrt{119}}{6}$ b) $\frac{-11\pm i\sqrt{119}}{6}$ c) $5,\frac{-4}{3}$ d) $-5,\frac{4}{3}$

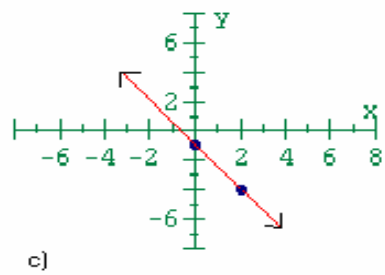
31. Find the equation of the line through the points (-5, 2) and (4, -3).

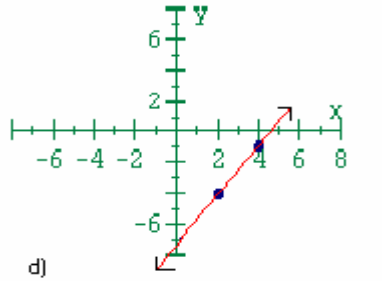
a) $y=-2x-8$ b) $y=-\frac{2}{7}x+\frac{4}{7}$ c) $y=\frac{5}{9}x+\frac{43}{9}$ d) $y=-\frac{5}{9}x-\frac{7}{9}$

32. Graph the line through (2, -4) with slope $\frac{-2}{3}$.

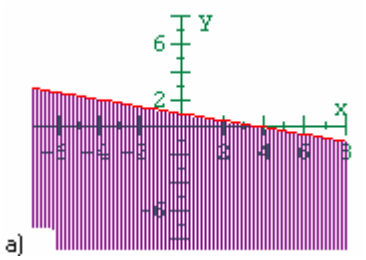


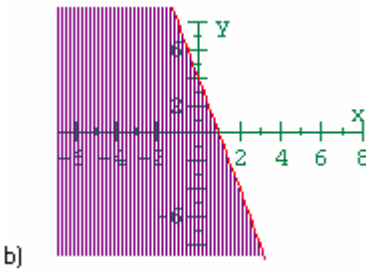


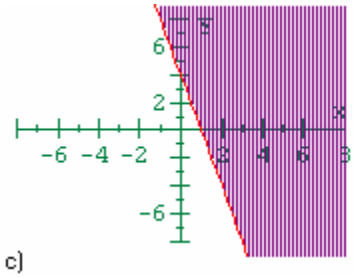


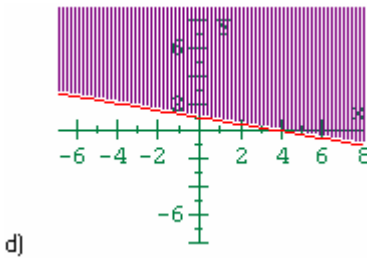


33. Graph the inequality $4x + y \le 4$.









34. If (*x*, *y*) is a solution of the system $\begin{cases} 3x = 5y + 2 \\ y = 18 - 4x \end{cases}$, find the value of *x*.

a) $x = 2$ b) $x = -4$ c) $x = 4$ d) $x = -1$

35. A company has found that the daily demand for its product varies inversely as the square root of the price. When the price is \$25, the demand is approximately 1,000 units. Approximate the demand if the price is increased to \$28.

a) 5,000 units b) 945 units c) 32 units d) 95 units

36. Simplify: $\left(16x^{\frac{2}{3}}y^{\frac{2}{5}}\right)^{\frac{1}{2}}$

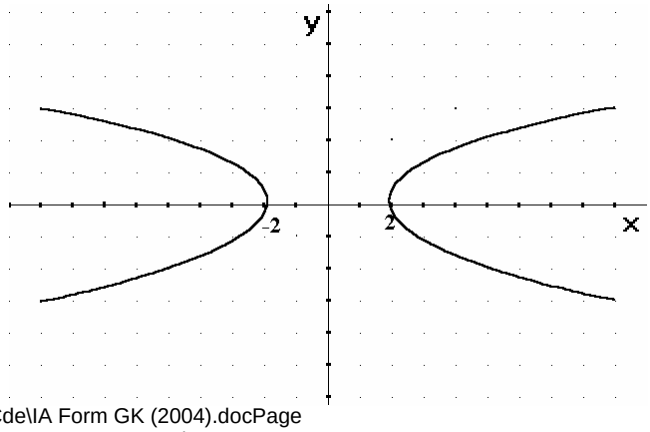
a) $16x^{\frac{1}{3}}y^{\frac{1}{5}}$ b) $4x^{\frac{7}{6}}y^{\frac{9}{10}}$

c) $16x^{\frac{4}{3}}y^{\frac{4}{5}}$ d) $4x^{\frac{1}{3}}y^{\frac{1}{5}}$

37. Simplify completely: $\dfrac{x^3-3x^2+x-3}{x^2-4x-5} \div \dfrac{5x^3+5x}{10-2x}$

a) $\dfrac{5x(x-3)(x^2+1)^2}{-2(x+1)(x-5)^2}$ b) $\dfrac{-2(x-3)}{5x(x+1)}$ c) $\dfrac{-2(x-3)(5-x)}{5x(x-5)(x+1)}$ d) $\dfrac{28}{45}$

38. For the graph, find the domain:



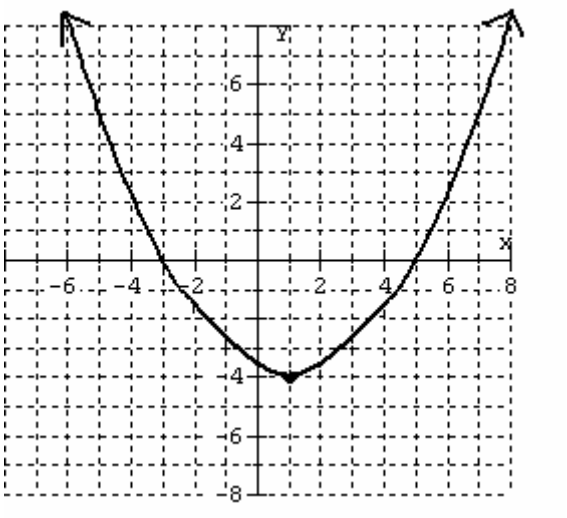
a) $(-\infty,\infty)$

b) [-2, 2]

c) $(-\infty,-2]\cup[2,\infty)$

d) $[-2,0)\cup(0,2]$

39. Find the range of the given graph.



a) [-3, 5]

b) $[-4, \infty)$

c) $[-3.5, \infty)$

d) $[5, -\infty)$

40. Solve the system $\begin{cases} x = \frac{3}{2}y + 4 \\ 2x - 3y = 8 \end{cases}$

a) (4, 0) b) (0, 0) c) infinitely many solutions d) no solution

1. D	2. D	3. D	4. C	5. C	6. B	7. C	8. C	9. B	10. D
11. C	12. C	13. B	14. D	15. B	16. C	17. D	18. A	19. B	20. D
21. D	22. C	23. B	24. C	25. C	26. A	27. B	28. B	29. B	30. C
31. D	32. A	33. B	34. C	35. B	36. D	37 B	38. C	39. B	40. C