Show all work on separate paper; #1-17 no calculators Name_____

Algebra 2 PRACTICE Final

Simplify.

1) $\sqrt{54}$

2) $\sqrt{24x^4y^3}$

3) $\dfrac{3\sqrt{12}}{\sqrt{3}}$

Write each expression in radical form.

4) $(3k)^{\frac{5}{2}}$

Write each expression in exponential form.

5) $(\sqrt[4]{2p})^7$

Simplify.

6) $(5+5\sqrt{2})(-3+\sqrt{2})$

7) $-\sqrt{12}-\sqrt{12}-\sqrt{5}$

8) $\dfrac{5}{4-\sqrt{5}}$

9) $\left(\dfrac{2x^3\cdot x^3}{x^3y^{-1}}\right)^4$

10) $\dfrac{\left(x^{\frac{3}{2}}\right)^2}{x^{-\frac{4}{3}}}$

11) $(r^4)^{\frac{3}{2}}$

Solve each equation. Remember to check for extraneous solutions.

12) $\sqrt{n+1}=3$

13) $r-5=\sqrt{-3r+15}$

Evaluate each expression.

14) $\log_6 \dfrac{1}{36}$

15) $\log_{27} 3$

Solve each equation by changing the base.

16) $9^a=27^{-3a}$

17) $32^{-2k}=8^{2-2k}$

Simplify each expression.

18) $\dfrac{4}{10p-18}$

19) $\dfrac{4}{x+10} \cdot \dfrac{10x}{4x+40}$

20) $\dfrac{n+4}{9n+45} \div \dfrac{1}{n+5}$

21) $\dfrac{6m}{m-1} - \dfrac{3}{m-6}$

22) $\dfrac{6r+2}{r+5} - \dfrac{3}{r+1}$

23) $\dfrac{\frac{1}{2}}{\frac{x^2}{4} + \frac{x}{16}}$

24) $\dfrac{\frac{16}{a}}{\frac{9}{a^2}}$

Solve each equation. Remember to check for extraneous solutions.

25) $\dfrac{1}{b} = \dfrac{2b-12}{b} + \dfrac{5}{2b}$

26) $\dfrac{3}{x} = \dfrac{x-3}{x^2-5x} + \dfrac{x^2-x-30}{x^2-5x}$

Solve any way you want (complete the square, factor, quadratic formula, square root both sides).

27) $x^2 + 18x - 83 = 5$

28) $n^2 - 42 = n$

29) $4a^2 + 24a + 35 = 0$

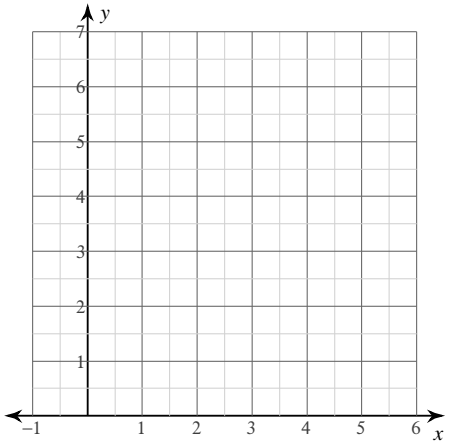
30) $v^2 + 3 = 25$

31) $6x^2 + 8x - 78 = 0$

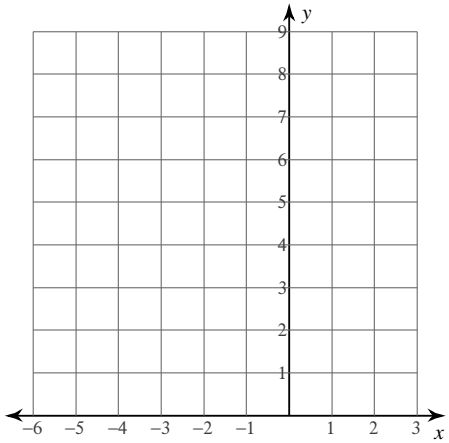
32) $6x^2 = -8x + 128$

Sketch the graph of each function and identify the Vertex.

33) $y = x^2 - 8x + 18$



34) $f(x) = (x+4)^2 + 4$



Condense each expression to a single logarithm.

35) $3\log_4 8 + 9\log_4 11$

Expand each logarithm.

36) $\log_6 \sqrt{a \cdot b \cdot c}$

Solve each equation.

37) $\log_7 6 + \log_7 3x = \log_7 10$

38) $\log_9 7 + \log_9 (x + 6) = \log_9 35$

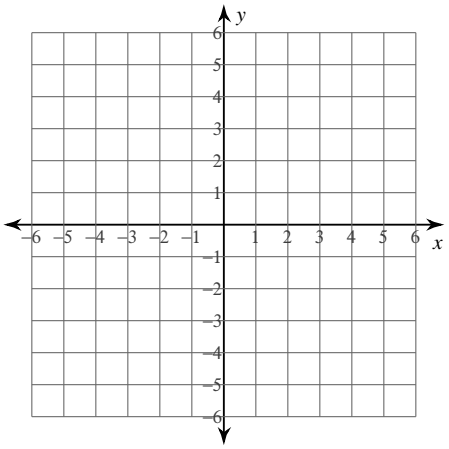
Solve each equation using logarithms.

39) $12^r = 83.4$

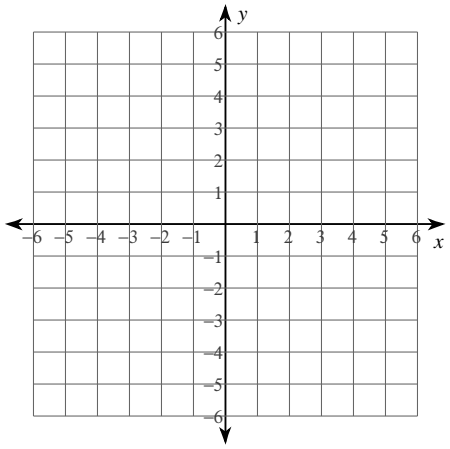
40) $9^x = 5$

Sketch the graph of each line.

41) $x - 3y = -3$



42) $y = -\frac{1}{4}x + 2$



43) The school that Bill goes to is selling tickets to a play. On the first day of ticket sales the school sold 13 senior citizen tickets and 13 student tickets for a total of $260. The school took in $48 on the second day by selling 3 senior citizen tickets and 1 student ticket. Find the price of a senior citizen ticket and the price of a student ticket.

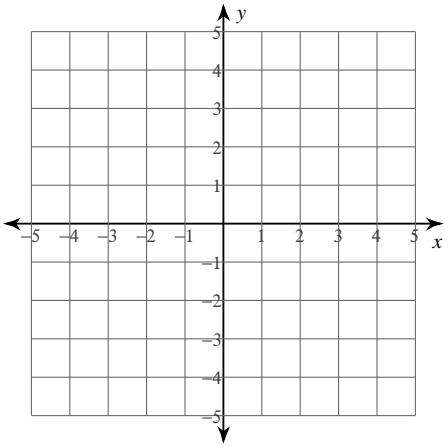
Write the slope-intercept form of the equation of the line through the given points.

44) through: $(0, 4)$ and $(4, -1)$

Sketch the solution to each system of inequalities.

45) $y > -\frac{4}{3}x - 3$

$y < \frac{2}{3}x + 3$



Solve.

46) $a^4 - 2a^2 - 48 = 0$

Simplify.

47) $(4 - 5i)(-3 + 8i)$

Divide.

48) $(12b^4 + 2b^3 + 12b^2) \div 6b^3$

Answers to Algebra 2 PRACTICE Final

1) $3\sqrt{6}$

2) $2x^2y\sqrt{6y}$

3) 6

4) $\left(\sqrt{3k}\right)^5$

5) $(2p)^{\frac{7}{4}}$

6) $-5-10\sqrt{2}$

7) $-4\sqrt{3}-\sqrt{5}$

8) $\frac{20+5\sqrt{5}}{11}$

9) $16y^4x^{12}$

10) $x^{\frac{13}{3}}$

11) r^6

12) $\{8\}$

13) $\{5\}$

14) -2

15) $\frac{1}{3}$

16) $\{0\}$

17) $\left\{-\frac{3}{2}\right\}$

18) $\frac{2}{5p-9}$; $\left\{\frac{9}{5}\right\}$

19) $\frac{10x}{(x+10)^2}$

20) $\frac{n+4}{9}$

21) $\frac{6m^2-39m+3}{(m-6)(m-1)}$

22) $\frac{6r^2+5r-13}{(r+5)(r+1)}$

23) $\frac{8}{4x^2+x}$

24) $\frac{16a}{9}$

25) $\left\{\frac{21}{4}\right\}$

26) $\{6,-3\}$

27) $\{4,-22\}$

28) $\{7,-6\}$

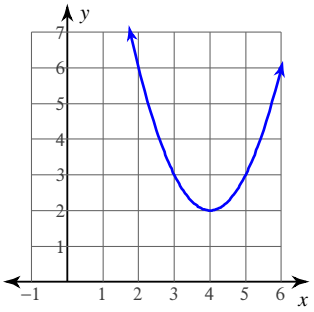
29) $\left\{-\frac{7}{2},-\frac{5}{2}\right\}$

30) $\left\{\sqrt{22},-\sqrt{22}\right\}$

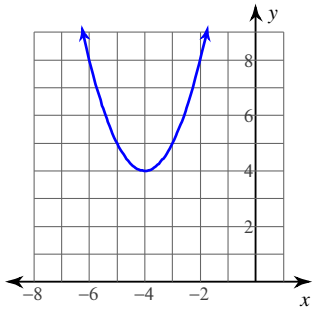
31) $\left\{3,-\frac{13}{3}\right\}$

32) $\left\{4,-\frac{16}{3}\right\}$

33)



34)



35) $\log_4\left(11^9\cdot 8^3\right)$

36) $\frac{\log_6 a}{2}+\frac{\log_6 b}{2}+\frac{\log_6 c}{2}$

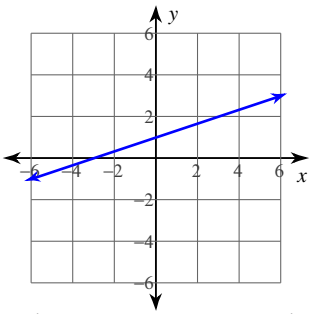
37) $\left\{\frac{5}{9}\right\}$

38) $\{-1\}$

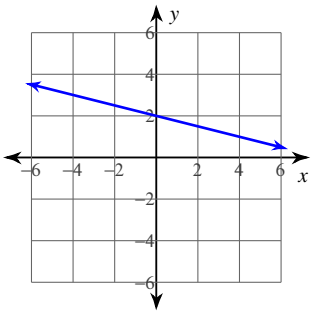
39) 1.7802

40) 0.7325

41)



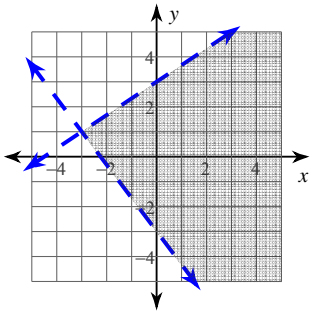
42)



43) senior citizen ticket: \$14, student ticket: \$6

44) $y = -\frac{5}{4}x + 4$

45)



46) $2\sqrt{2}, -2\sqrt{2}, i\sqrt{6}, -i\sqrt{6}$

47) $28 + 47i$

48) $2b + \frac{1}{3} + \frac{2}{b}$