PreAP PreCalulus Summer Work

Date_____ Period____

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

1) through: $(4, 2)$, slope = -3

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

2) through: $(-1, -2)$ and $(0, 2)$

Write the slope-intercept form of the equation of the line described.

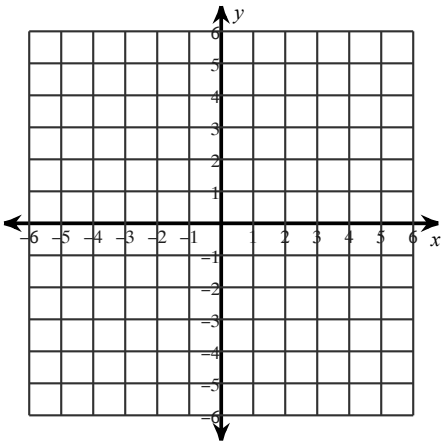
3) through: $(-3, 1)$, parallel to $y = -2x - 1$

Write the point-slope form of the equation of the line described.

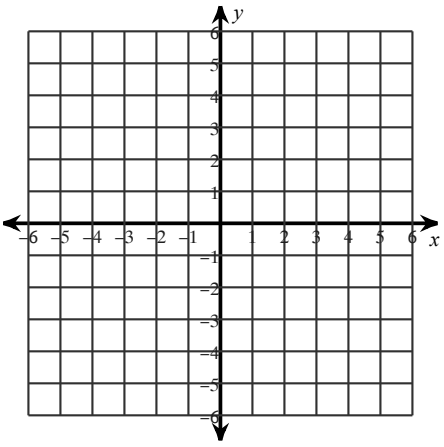
4) through: $(3, 4)$, parallel to $y = \frac{7}{3}x - 1$

Graph each equation.

5) $y = -3|x + 4| + 4$

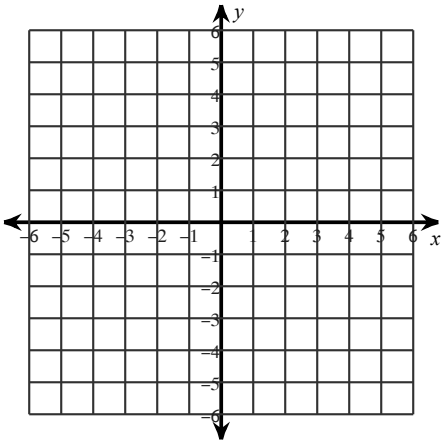


6) $y = 2|x - 3|$



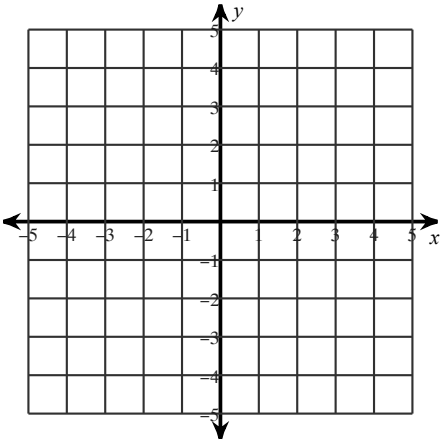
Sketch the graph of each linear inequality.

7) $y > \frac{7}{3}x - 3$



Sketch the solution to each system of inequalities.

8) $y \geq 2x + 3$
$y < -x - 3$



Solve each system

9) $10x + 5y = -30$
$-4x + 9y = -10$

Solve each system by elimination.

10) $-3x - 4y + 3z = 18$
$2x + 6y - 3z = -25$
$6x - 3y - z = 12$

Simplify.

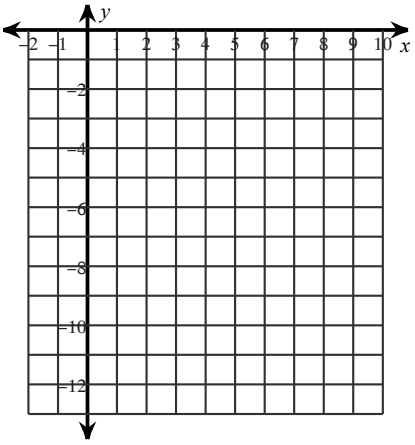
11) $(4i)(-6i)(4 + i)$

12) $\frac{4i}{-6 + 9i}$

13) $\frac{\sqrt{7} - 8}{\sqrt{6} - \sqrt{10}}$

Sketch the graph of each function.

14) $y < -2x^2 + 4x - 6$



Factor each completely.

15) $10x^2 + 45x$

16) $5a^2 + 3a - 14$

17) $10x^2 + 84x + 98$

18) $5x^3 + 4x^2 - x$

19) $2v^4 - 17v^3 + 35v^2$

Solve each equation with the quadratic formula.

20) $9r^2 - 4r = -7$

21) $6v^2 - 17 = -2v$

Find each product.

22) $(3p^2 + p + 1)(5p^2 - 7p + 3)$

Divide.

23) $(4r^3 - 33r^2 - 19r - 71) \div (r - 9)$

Factor each completely.

24) $8n^3 + 7n^2 + 8n + 7$

25) $27x^3 + 64$

26) $2x^3 - 250$

Write a polynomial function of least degree with integral coefficients that has the given zeros.

27) $-4, \ -2, \ 0$

28) $3, \ -2, \ 5$

Factor each. One root has been given.

29) $x^3 - 2x^2 - 23x + 60 = 0; \ -5$

Find all roots.

30) $x^4 + 3x^2 - 28 = 0$

31) $x^3 + 2x^2 + 5x + 10 = 0$

Describe the end behavior of each function.

32) $f(x) = -x^3 + 2x^2 + 3$

Evaluate each function.

33) $g(x) = -\left|-3x + 2\right| - 2$; Find $g(10)$

34) $w(x) = x^2 + 5$; Find $w(3x)$

Perform the indicated operation.

35) $h(t) = -t + 4$
$g(t) = t - 1$
Find $h(g(t))$

36) $g(x) = 3x + 2$
$f(x) = x^2 + 5x$
Find $g(f(-3))$

37) $g(x) = 4x + 1$
$h(x) = 2x - 2$
Find $5g(z^2) - 5h(z^2)$

Simplify.

38) $4\sqrt[3]{-250r}$

39) $-3\sqrt{54} - 3\sqrt{3} - 3\sqrt{54}$

40) $5\sqrt{6}\left(\sqrt{2} + 2\right)$

Write each expression in exponential form.

41) $\sqrt[3]{4a}$

Simplify.

42) $\left(r^{20}\right)^{\frac{3}{5}}$

Simplify. Your answer should contain only positive exponents.

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

44) $\dfrac{\left(m^4 n^4\right)^4}{m^4 n^2 \cdot m^3 n^{-4}}$

Solve each equation. Remember to check for extraneous solutions.

45) $-5 = -k + \sqrt{10 - 2k}$

Simplify each and state the excluded values.

46) $\dfrac{n^2 - 5n - 24}{n^2 + 7n + 12}$

47) $\dfrac{30n + 6}{12n - 36}$

Simplify each expression.

48) $\dfrac{b + 4}{b - 5} \cdot \dfrac{5 + 4b - b^2}{4b + 4}$

49) $\dfrac{6a + 42}{a + 7} \cdot \dfrac{a - 9}{6}$

50) $\dfrac{p + 1}{6p - 12} + \dfrac{3p}{2}$

51) $\dfrac{2}{b - 4} - \dfrac{6}{3b + 5}$

Rewrite each equation in exponential form.

52) $\log_7 343 = 3$

Rewrite each equation in logarithmic form.

53) $19^2 = 361$

Expand each logarithm.

54) $\log \left(a^3 \cdot b\right)^5$

Condense each expression to a single logarithm.

55) $5 \log_9 a - 15 \log_9 b$

Determine if the sequence is arithmetic. If it is, find the common difference and the 52nd term.

56) $-12,\ -22,\ -32,\ -42, \ldots$

57) $-39,\ -41,\ -43,\ -45, \ldots$

Determine if the sequence is geometric. If it is, find the common ratio and the 8th term.

58) $-1,\ -5,\ -25,\ -125, \ldots$

Convert each degree measure into radians and each radian measure into degrees.

59) $\dfrac{7\pi}{4}$

60) $195°$