1.

$4x - 3 \leq 5x - 2x$

$4x - 3 \leq 3x$

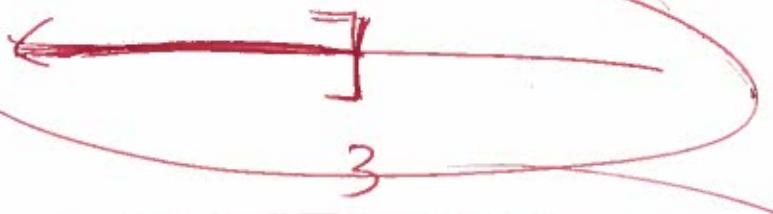
$4x - 3 + 3 \leq 3x + 3$

$4x \leq 3x + 3$

$4x - 3x \leq 3x + 3 - 3x$

$1x \leq 3$

$x \leq 3$



$(-\infty, 3]$

1

M032039practskp

10-08-17

2. graph

$y = -3x + 6$

$y = -3(0) + 6$

$y = 0 + 6$

$y = 6$

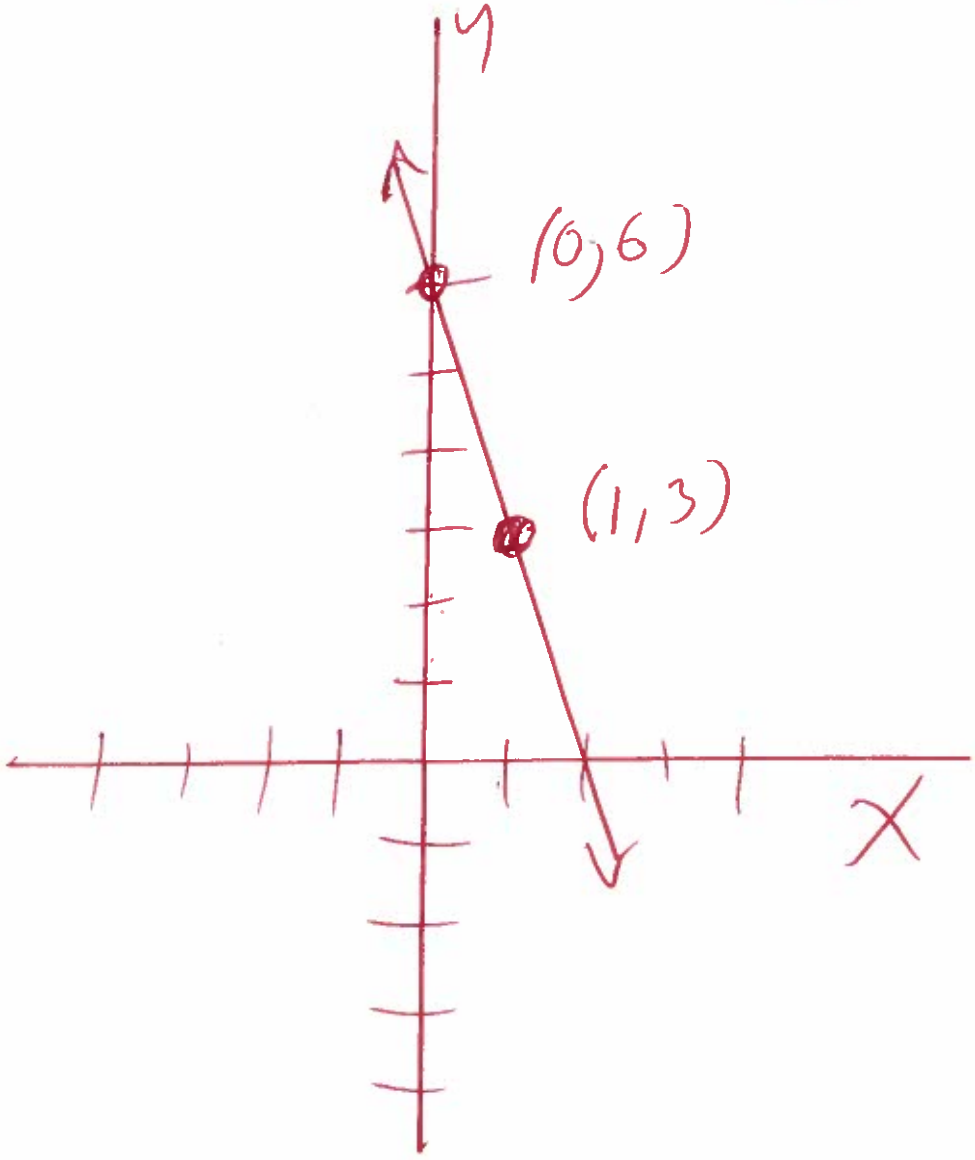
$y = -3(1) + 6$

$y = -3 + 6$

$y = 3$

x	y
0	6
1	3

2



3. If $P(x) = x^2 + x + 5$ find $P(7)$

$P(7) = (7)^2 + (7) + 5$

$P(7) = (7)(7) + (7) + 5$

$P(7) = 49 + 7 + 5$

$P(7) = 56 + 5$

$P(7) = 61$

4. $\dfrac{5x^2-4x+5}{x-2}$

use Long division

$5x + 6 + \dfrac{17}{x-2}$

$x-2 \;\overline{)\; 5x^2-4x+5}$

$-(5x^2 \mp 10x)$

$6x+5$

$-(6x \mp 12)$

17 rem

$\dfrac{5x^2-4x+5}{x-2}$ use synthetic division

OR $x-2$

$2 \;\overline{)\; 5 \quad -4 \quad 5}$

$\qquad\quad 10 \quad 12$

$5 \quad 6 \quad (17)$ Rem

$5x+6+\dfrac{17}{x-2}$

5. factor

$-45x^6y^5 - 36x^7y^2 =$

$9x^6y^2(-5y^3 - 4x^1) =$

$9x^6y^2(-5y^3 - 4x) =$

5

(6) facts

$3x^3 - 21x^2 + 36x =$

$3x(x^2 - 7x + 12) =$

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

possibly (6)

12 · 1

6 · 2

3 · 4

7. Factor

$3x^2 - 32x - 11 =$

$(3x + 1)(x - 11) =$

Possible

3.1 1.11 1

(8.) factor

$196x^2 - 81y^2 =$

$(14x)^2 - (9y)^2 =$

$(14x+9y)(14x-9y) =$

(1)

formula

$a^2 - b^2 = (a+b)(a-b)$

9. factor

$xy^3 - 25xyz^2 =$

$x^1y^3 - 25x^1y^1z^2 =$

formula $a^2 - b^2 = (a+b)(a-b)$

$xy(y^2 - 25z^2) =$

$xy((y)^2 - (5z)^2) =$

$xy(y+5z)(y-5z) =$

(10) Solve

$(3x-7)(7x+6)=0$

16.

Let $3x-7=0$ OR $7x+6=0$

$3x-7+7=0+7$ OR $7x+6-6=0-6$

$3x=7$ OR $7x=-6$

$\frac{3x}{3}=\frac{7}{3}$ OR $\frac{7x}{7}=\frac{-6}{7}$

$x=\frac{7}{3}$ OR $x=\frac{-6}{7}$

11. Solve $x^2 - 10x + 24 = 0$

$(x-4)(x-6) = 0$

Set $x-4=0$ OR $x-6=0$

$x-4+4=0+4$ OR $x-6+6=0+6$

$x=4$ OR $x=6$

Possible 24.1, 12.2, ~~6.4~~, 3.8

11.

(12) Solve

$x^2+3x-40=0$

$(x-5)(x+8)=0$

Possible
40.1
20.2
10.4
5.8

12

Let $x-5=0$ OR $x+8=0$

$x-5+5=0+5$ OR $x+8-8=0-8$

$x=5$ OR $x=-8$

13.

Solve

$16x^2 - 25 = 0$

formula $a^2 - b^2 = (a+b)(a-b)$

13

$(4x)^2 - (5)^2 = 0$

$(4x+5)(4x-5) = 0$

Let $4x+5=0$ OR $4x-5=0$

$4x+5-5 = 0-5$ OR $4x-5+5 = 0+5$

$4x = -5$ OR $4x = 5$

$\frac{4x}{4} = \frac{-5}{4}$ OR $\frac{4x}{4} = \frac{5}{4}$

$x = -5/4$ OR $x = 5/4$

(14) Solve

$3x^2 - 2x - 8 = 0$

3.1 8.1 3.4 (14)

$(3x+4)(x-2) = 0$

Let $3x+4=0$ OR $x-2=0$

$3x+4-4=0-4$ OR $x-2+2=0+2$

$3x = -4$ OR $x = 2$

$\frac{3x}{3} = \frac{-4}{3}$ OR

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

15. Simplify

15

$$\frac{2}{4a-10} =$$

$$\frac{2(1)}{2(2a-5)} =$$

$$\frac{1}{2a-5} =$$

16. $\frac{x}{7x-49} \cdot \frac{x^2-7x}{2} =$

$\frac{x}{7(x-7)} \cdot \frac{x(x-7)}{2} =$

$\frac{x}{7(x-7)} \cdot \frac{x(x-7)}{2} =$

$\frac{x^2}{14} =$

16

17) $\frac{x^2+4x+3}{x-9} \div \frac{x^2-3x-4}{x-9} =$ 17)

$\frac{x^2+4x+3}{x-9} \cdot \frac{x-9}{x^2-3x-4} =$

$\frac{(x+1)(x+3)}{(x-9)} \cdot \frac{(x-9)}{(x+1)(x-4)} =$ factor

$\frac{(x+1)(x+3)}{(x-9)} \cdot \frac{(x-9)}{(x+1)(x-4)} =$

$\frac{x+3}{x-4} =$

(18) $\frac{y^2}{y-9} - \frac{22y-117}{y-9} =$

$\frac{(y^2)-(22y-117)}{y-9} =$

$\frac{y^2-22y+117}{y-9} =$

$\frac{(y-9)(y-13)}{(y-9)} =$

$\frac{(y-9)(y-13)}{(y-9)} =$

$y-13 =$

(7)

Prime 2, 3, 5, 7

3 | 117

3 | 39

13 | 13

1

Possible

(3)(39)

(9)(13)

(19) $-18 \leq 8x - 10 \leq 14$ (19)

$-18 + 10 \leq 8x - 10 + 10 \leq 14 + 10$

$-8 \leq 8x \leq 24$

$\frac{-8}{8} \leq \frac{8x}{8} \leq \frac{24}{8}$

$-1 \leq x \leq 3$

$[-1, 3]$

20 $|2x-1|=15$

formula
$|x|=a$
$x=-a$ or $x=a$

20

$2x-1=-15$ or $2x-1=15$

$2x-1+1=-15+1$ or $2x-1+1=15+1$

$2x=-14$ or $2x=16$

$\frac{2x}{2}=\frac{-14}{2}$ or $\frac{2x}{2}=\frac{16}{2}$

$x=-7$ or $x=8$

21. $|x+4|<4$

formula
$|x|<a$
$-a<x<a$

21

$-4<x+4<4$

$-4-4<x+4-4<4-4$

$-8<x<0$

$(-8, 0)$

22. $|x+3| \geq 8$

$|x| > a$
$x < -a$ or $x > a$

22.

$x+3 \leq -8$ or $x+3 \geq 8$

$x+3-3 \leq -8-3$ OR $x+3-3 \geq 8-3$

$x \leq -11$ or $x \geq 5$

$(-\infty, -11] \cup [5, \infty)$

23

$\sqrt[3]{-27x^{15}} =$

$\sqrt[3]{(-3)^3 x^{15}} =$

$(-3)^1 x^5 =$

$-3x^5 =$

Prime 2, 3, 5, 7...

3 | 27
3 | 9
3 | 3
1

2^3

divide powers

24.

$\sqrt{16a^{10}b^{18}} =$

Prime 2, 3, 5, 7, ...

$\sqrt[2]{2^4 a^{10} b^{18}} =$

2	16
2	8
2	4
2	2
	1

24

$2^2 a^5 b^9 =$ divide powers

$(2 \times 2)\, a^5 b^9 =$

$4a^5 b^9 =$

25. $\sqrt[3]{-8x^{12}y^6} =$

Prime 2, 3, 5, 7...

$\sqrt[3]{(-2)^3 x^{12} y^6} =$

2 | 8
2 | 4
2 | 2
1

25

$(-2)^1 x^4 y^2 =$ divide powers

$-2x^4y^2 =$

26. $16^{3/4} =$

$(2^4)^{3/4} =$

$(2^{\frac{4}{1}})^{\frac{3}{4}} =$

$2^{\frac{12}{4}} =$ Multi powers

$2^3 =$ divid.

$(2)(2)(2) =$

$8 =$

Prim 2, 3, 5, 7

2 | 16

2 | 8

2 | 4

2 | 2

1

26

27. $\sqrt{175} =$

Prime 2, 3, 5, 7...

5 | 175
5 | 35
7 | 7
1

$\sqrt{5^2 \cdot 7^1} =$

$5^1\sqrt{7} =$ divide power

$5\sqrt{7} =$

28. $\sqrt[3]{750}$

$\sqrt[3]{5^3 \cdot 6} =$

$5^1 \sqrt[3]{6} =$

$5\sqrt[3]{6} =$

Prim 2, 3, 5, 7, ...

2 | 750

3 | 375

5 | 125

5 | 25

5 | 5

1

28.

29) Find the distance between $(3, 2)$ and $(15, 7)$

$x_1 \; y_1 \qquad x_2 \; y_2$

29)

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

$$d = \sqrt{((3) - (15))^2 + ((2) - (7))^2}$$

$$d = \sqrt{(3 - 15)^2 + (2 - 7)^2}$$

$$d = \sqrt{(-12)^2 + (-5)^2}$$

$$d = \sqrt{144 + 25}$$

$$d = \sqrt{169}$$

$$d = 13$$

30) Find the midpoint

(8, -8) and (4, 2)

x_1 y_1 x_2 y_2

30)

$$\text{Midpoint} = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

$$\text{Midpoint} = \left(\frac{(8)+(4)}{2}, \frac{(-8)+(2)}{2}\right)$$

$$\text{Midpoint} = \left(\frac{8+4}{2}, \frac{-8+2}{2}\right)$$

$$\text{Midpoint} = \left(\frac{12}{2}, \frac{-6}{2}\right)$$

$$\text{Midpoint} = (6, -3)$$

31. Solve

$$\sqrt{x-8} = 3$$

$$(\sqrt{x-8})^2 = (3)^2$$

$$x - 8 = 9$$

$$x - 8 + 8 = 9 + 8$$

$$x = 17$$

32

$(2+5i)-(5-5i)=$

$2+5i-5+5i=$

$-3+10i=$

a+bi form

32

33) $\frac{1+9i}{1+i} =$

33)

$\left(\frac{1+9i}{1+i}\right)\left(\frac{1-i}{1-i}\right) =$ Multiply

$\frac{1-1i+9i-9i^2}{1-1i+1i-i^2} =$

formula $i^2 = -1$

$\frac{1+8i-9i^2}{1-i^2} =$

$\frac{1+8i-9(-1)}{1-(-1)} =$

$\frac{1+8i+9}{1+1} =$

$\frac{10+8i}{2} =$

$5+4i =$

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

34

$\sqrt{(x+2)^2} = \pm\sqrt{4}$

$x+2 = \pm 2$

Let $x+2 = -2$ OR $x+2 = 2$

$x+2-2 = -2-2$ OR $x+2-2 = 2-2$

$x = -4$ OR $x = 0$

35. Use Quadratic formula

$1m^2 - 6m + 5 = 0$

$a=1,\ b=-6,\ c=5$

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(1)(5)}}{2(1)}$$

$$x = \frac{6 \pm \sqrt{36-20}}{2}$$

$$x = \frac{6 \pm \sqrt{16}}{2}$$

$$x = \frac{6 \pm 4}{2}$$

$x = 3 \pm 2$

$x = 3+2$ OR $x = 3-2$

$x = 5$ OR $x = 1$

or factor

$m^2 - 6m + 5 = 0$

$(m-1)(m-5) = 0$

set $m-1=0$ OR $m-5=0$

$m-1+1=0+1$ OR $m-5+5=0+5$

$m = 1$ OR $m = 5$

35

36) Use Quadratic formula

$5y = 2y^2 - 3$

$0 = 2y^2 - 3 - 5y$

$0 = 2y^2 - 5y - 3$

$a = 2,\ b = -5,\ c = -3$

$$y = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$y = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(2)(-3)}}{2(2)}$$

$$y = \frac{5 \pm \sqrt{25 + 24}}{4}$$

$$y = \frac{5 \pm \sqrt{49}}{4}$$

$$y = \frac{5 \pm 7}{4}$$

$y = \frac{5+7}{4}$ OR $y = \frac{5-7}{4}$

$y = \frac{12}{4}$ OR $y = \frac{-2}{4}$

$y = 3$ OR $y = \frac{2(-1)}{4(2)}$

$y = -1/2$

36

37. Use Quadratic formula

$1x^2 - 7x - 3 = 0$

$a = 1,\ b = -7,\ c = -3$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(1)(-3)}}{2(1)}$$

$$x = \frac{7 \pm \sqrt{49 + 12}}{2}$$

$$x = \frac{7 \pm \sqrt{61}}{2}$$

$$x = \frac{7 + \sqrt{61}}{2} \quad \text{or} \quad x = \frac{7 - \sqrt{61}}{2}$$

37

38. Use Quadratic formula

$1x^2 + 2x + 5 = 0$

$a=1,\ b=2,\ c=5$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(2) \pm \sqrt{(2)^2 - 4(1)(5)}}{2(1)}$$

$$x = \frac{-2 \pm \sqrt{4 - 20}}{2}$$

formula $\sqrt{-1} = i$

$$x = \frac{-2 \pm \sqrt{-16}}{2}$$

$$x = \frac{-2 \pm 4i}{2}$$

$$x = -1 \pm 2i$$

$x = -1 - 2i$ OR $x = -1 + 2i$

39) graph

$f(x) = x^2 - 5$

$f(-1) = (-1)^2 - 5$

$f(-1) = (-1)(-1) - 5$

$f(-1) = 1 - 5$

$f(-1) = -4$

$f(0) = (0)^2 - 5$

$f(0) = (0)(0) - 5$

$f(0) = 0 - 5$

$f(0) = -5$

$f(1) = (1)^2 - 5$

$f(1) = (1)(1) - 5$

$f(1) = 1 - 5$

$f(1) = -4$

x	f(x)
-1	-4
0	-5
1	-4

39