Problem Set 19

1.) 40 2.) a) $\frac{1}{2}x-2$ b) $-3x+36$ c) $-a+7$ d) $2p^2-10p$ e) $-a^4+2a^3-8a$

3.) a) $-x+8$ b) -2 4.) a) -2 b) 4 c) 0 d) no solution e) $\frac{2}{3}$ f) -30 g) 14

5.) a) \$400 b) \$2500 6.) a) 51 000 b) 69 000 7.) a) 12 and 19 b) -12 and 19 8.) $20°, 50°, 110°$

9.) Julia is 19 and Tom is 24 10.) a) 27 in and 33 in b) 22 in and 38 in 11.) $29°$, $64°$, $87°$

12.) 8 and 19 13.) 17 miles 14.) 5 15.) a) $167F$ b) $-15C$

Problem Set 20

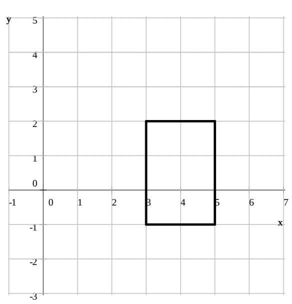
1.) E 2.) A 3.) C 4.) B 5.) C 6.) B 7.) E 8.) D 9.) D 10.) E

Problem Set 21

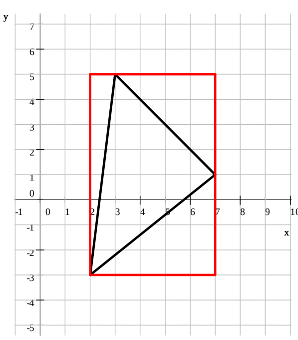
1.) a) $\frac{3}{5}$ b) 5 c) 30 d) 9 e) 10 f) 1 2.) a) $2a+3b$ b) $-7b$ c) $7b$ d) $-a-19b$
e) $-a+16b$ 3.) a) $2x^2+11x-21$ b) $x^2-8x+16$ c) $25x^2-4$ d) $25x^2-20x+4$

4.) a) 4 b) identity, all numbers are solution c) 6 d) 2 e) 0 f) no solution
g) identity, all numbers are solution 5.) a) $b=\frac{P-2a}{2}$ b) $y=\frac{-2x-6}{3}$ or $y=-\frac{2}{3}x-2$
c) $y=\frac{3x-24}{4}$ or $y=\frac{3}{4}x-6$ d) $C=\frac{5}{9}(F-32)$ or $y=\frac{5}{9}F-\frac{160}{9}$

6.) a) 11 in by 72 in b) -9 and 32 c) $16, 17$, and 18 7.) a rectangle 8.) 18 unit^2



#7.)



#8.)

Problem Set 22

1.) 12 2.) a) 27 b) -2 c) 40 d) $-\frac{2}{9}$

3.) a) $6x^2 - xy - 2y^2$ b) $2x^2 - 3x - 27$ c) $4a^2 - 1$ d) $2x^2 - 3x + 1$ e) $9a^2 - 12ab + 4b^2$ f) $x^3 - 1$

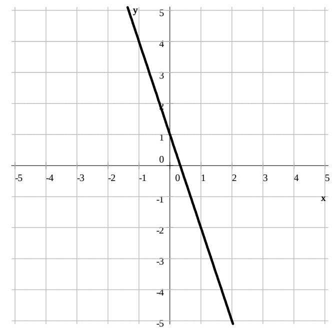
4.) a) 0 b) -7 c) there is no solution d) 22 5.) a) $a = \frac{4}{3}b + 20$ b) $b = \frac{3}{4}a - 15$

6.) 19 and 33 7.) $-14, -13$ and -12 8.) 9 ft by 41 ft 9.) a) \$5400 b) \$5832 10.) \$180

11.) 6% increase 12.) a)

x	-3	-2	-1	0	1	2	3
y	10	7	4	1	-2	-5	-8

b)

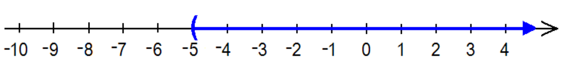


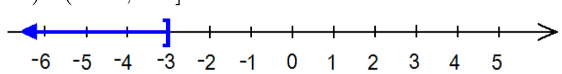
Problem Set 23

1.) 270 and 45 2.) $P = 26$ units, $A = 36$ unit^2 3.) a) 2 b) 3 c) 5 d) 7 e) 5

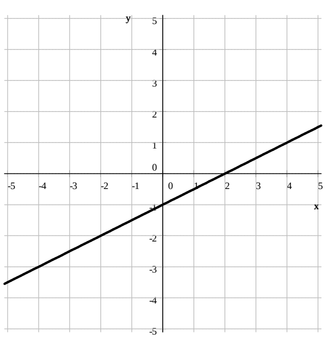
4.) a) $9a^2 - 49$ b) $9a^2 - 42a + 49$ c) $8x^3 - 27$ 5.) a) 10 b) identity, all numbers are solution

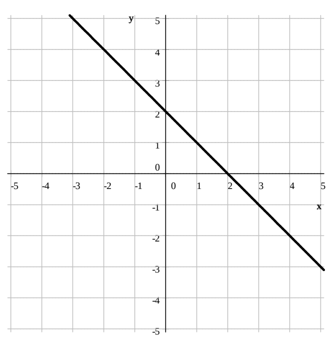
6.) a) $(-5, \infty)$ b) $(-\infty, -3]$





7.) a) $y = \frac{1}{2}x - 1$ b) $y = -x + 2$





8.) a) $t = \frac{A - P}{Pr}$ b) $n = \frac{PV}{RT}$ c) $y = \frac{C - ax}{b}$ d) $x = \frac{C - by}{a}$ 9.) \$4000 10.) 70 11.) 48 years

Problem Set 24

1.) A 2.) C 3.) C 4.) A 5.) B 6.) E 7.) B 8.) B 9.) D 10.) C 11.) B 12.) E
13.) C 14.) D 15.) C 16.) A 17.) C 18.) B 19.) C 20.) D

Problem Set 25

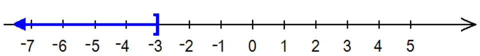
1.) 6 and 2400 2.) $P = 84\,\text{ft}$ $A = 210\,\text{ft}^2$ 3.) a) 10 b) 2 c) -7 d) -2

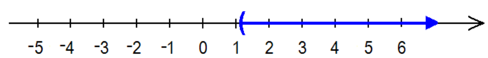
4.) a) $4x^9$ b) $-18a^3b^7$ c) $2x^2$ d) $\dfrac{x^2}{36y^6}$ 5.) a) $x^2 - 1$ b) $x^2 - 2x + 1$

c) $2x^2 - 13x - 5$ d) $x^3 - 8$ e) $-5x^2 + 6$ f) $4x^2 - 28x + 49$ g) $2x^3 - 5x^2 + 11x + 7$

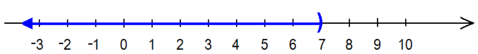
6.) a) identitiy, all numbers are solution b) 25 c) $\dfrac{3}{5}$

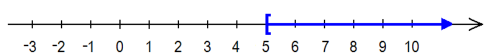
7.) a) $x \leq -3$ b) $x > \dfrac{9}{8}$





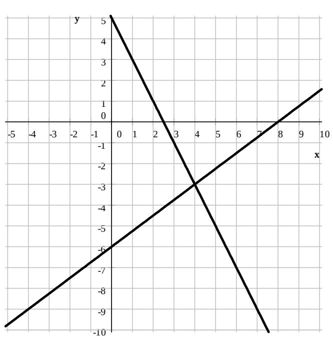
c) $x < 7$ d) $x \geq 5$





8.) a) $x = \dfrac{y - b}{m}$ b) $h = \dfrac{3V}{\pi r^2}$ 9.) \$440 10.) 85 11.) 8% increase 12.) 10 pencils and 15 pens

13.) a) b) $(4, -3)$



c) The intersection point is a point on both graphs, thus its coordinates form a solution for both equations. We check $(4, -3)$ with both equations: in case of $3x - 4y = 24$,

$$\text{LHS} = 3(4) - 4(-3) = 12 - (-12) = 24 = \text{RHS}$$

and in case of $y = -2x + 5$,

$$\text{RHS} = -2(4) + 5 = -8 + 5 = -3 = \text{LHS}$$

Problem Set 26

1.) a) $2x^{11}$ b) $\dfrac{2x^4}{y^3}$ c) 16 d) $4a^2 - 12ax + 9x^2$ e) $a^4 - b^4$ f) $2x^4 - 3x^3 + x^2 - 5$

2.) a) $4x$ b) 10 c) $4x^2 - 25$

3.) a) $6a^2b(xa - 3y - 1)$ b) $4x^2\left(x^5 - 3x^2 + 5\right)$ c) $2x^3\left(xy - y^2 + 10\right)$ d) $(3a + 7)(x - 5)$

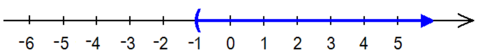
4.) a) $12(x - 6)(x + 6)$ b) $-c(5b - 9a)(9a + 5b)$ c) $\left(2x^5 - 1\right)\left(2x^5 + 1\right)$ d) $2(3k - 1)(3k + 1)$

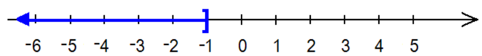
e) $(3x - 7)(3x + 7)(5a + 1)$

5.) a) $Z = \dfrac{2Y - X}{3}$ b) $C = \dfrac{5}{9}F - \dfrac{160}{9} = \dfrac{5(F-32)}{9} = \dfrac{5}{9}(F-32)$

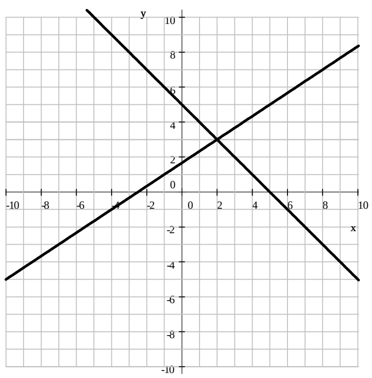
6.) a) -4 b) $-5, 0, 5$ c) $0, 8$ d) $0, -1, 7$

a) $x > -1$ b) $x \leq -1$





8.) a) $(2, 3)$



b) The point $(2,3)$ must be on the line $y = -x + 5$, since its coordinates form a solution to the equation: $3 = -(2) + 5$. The point $(2,3)$ must be on the line $2x - 3y = -5$, since its coordinates form a solution to the equation.

$$\begin{aligned} 2x - 3y &= -5 \\ 2(2) - 3(3) &= -5 \\ 4 - 9 &= -5 \end{aligned}$$

Since this point is on both lines, it must be an intersection point.

9.) 50 10.) 20% increase

Problem Set 27

1.) 40 and 2400 2.) 12 3.) a) -2 b) -4 c) -2 d) undefined

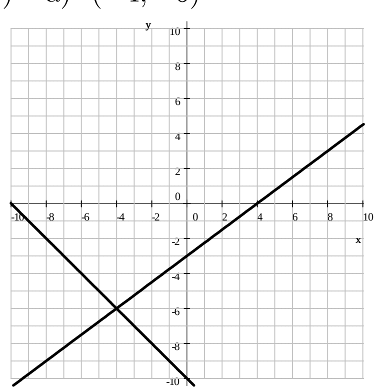
4.) a) $\dfrac{2a}{b^3}$ b) y^2 c) $-\dfrac{16}{3}ab^{24}$ d) $4x^2 - 4x + 1$ e) $12x$ f) $27a^3 - 8$ g) $15x^2 + 29x - 14$

5.) a) $5q^3p(2t-3)(2t+3)$ b) $2abx\left(4x^2+9\right)(2x-3)(2x+3)$ c) $5t^2\left(3x^3+10\right)\left(3x^3-10\right)$

d) $3b^3a^2\left(x^2+4\right)(x+2)(x-2)$ 6.) a) -4 b) $0, 9$ c) $0, -3, 3$ d) 3 e) -1

7.) $b = \dfrac{2}{5}a - 4$ 8.) 10 9.) 0 and 5 10.) 9 cm by 20 cm 11.) -128 and -126

12.) a) $(-4, -6)$



b) The point $(-4,-6)$ must be on the line $3x - 4y = 12$, since its coordinates form a solution to the equation.

$$3(-4) - 4(-6) = -12 + 24 = 12$$

The point $(-4,-6)$ must be on the line $y = -x - 10$, since its coordinates form a solution to the equation.

$$-(-4) - 10 = 4 - 10 = -6$$

Since this point is on both lines, it must be an intersection point.