MATH1040 Summer Assignment 3 Solutions

1. $\frac{2(x-3)}{7}+5=9$

$\frac{2(x-3)}{7}=4$

$2(x-3)=28$

$x-3=14$

$x=17$

2. $|-2x+6|=2$

$-2x+6=2$ or $-2x+6=-2$

$-2x=-4$ $\quad$ $-2x=-8$

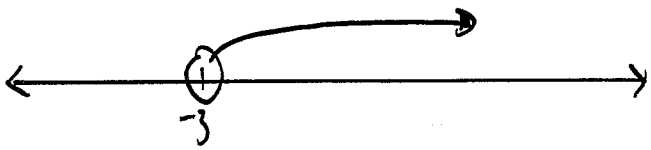
$x=2$ $\quad$ $x=4$

3. $5x+2>3x-4$ $\quad$ $(-3,\infty)$

$2x+2>-4$

$2x>-6$

$x>-3$



4. a) $\sqrt{40}$

$=\sqrt{4\times10}$

$=2\sqrt{10}$

b) $2\sqrt{3}\times4\sqrt{6}$

$=8\sqrt{18}$

$=8\sqrt{9\times2}$

$=8\times3\sqrt{2}$

$=24\sqrt{2}$

5. a) $x^5y^3\times x^4y^2\div(x^6y^4)$

$=x^9y^5\div(x^6y^4)$

$=x^3y^1$

$=x^3y$

b) $(p^2q^3)^2\times p^4q^2\div(pq)^8\times p^0$

$=p^4q^6\times p^4q^2\div(pq)^8\times1$

$=p^8q^8\div p^8q^8\times1$

$=1\times1$

$=1$

6. a) $(-2)^4$

$=-2\times-2\times-2\times-2$

$=16$

b) -3^4

$=-3\times3\times3\times3$

$=-81$

c) 2^{-4}

$=\frac{1}{2}$

$=\frac{1}{2\times2\times2\times2}$

$=\frac{1}{16}$

d) $(-2)^{-3}$

$= \dfrac{1}{(-2)}$

$= \dfrac{1}{-2\times-2\times-2}$

$= -\dfrac{1}{8}$

e) $(-2)^2 - 2$

$= 4 - 2$

$= 2$

f) $-(-2^2) - 2$

$= -(4) - 2$

$= -6$

7. $\sum_{i=-1}^{3}(ix+3) = 5$

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

$= 5x + 15$

RHS $= 5$

So $5x + 15 = 5$

$5x = -10$

$x = -2$

8. a) $2h + 4h + 6h + 8h + 10h = \sum_{i=1}^{5} 2ih$

b) $^{-4}/_{5} + ^{-4}/_{6} + ^{-4}/_{7} + ^{-4}/_{8} = \sum_{i=5}^{8} \dfrac{-4}{i}$

9. Wally ran x laps. Wayne ran 8 more, so $x + 8$.

So, $x + x + 8 = 46$

$2x = 38$

$x = 19$

So Wally ran 19 laps and Wayne ran $19 + 8 = 27$ laps (check: $19 + 27 = 46$)

10. Let the first book have x pages. The second book therefore has $40 + 4x$ pages.

So, $x + 40 + 4x = 390$

$5x = 350$

$x = 70$

So the first book has 70 pages and the second book has $40 + 4 \times 70 = 320$. (check: $70 + 320 = 390$)

11. Let the middle number be n. The number one less than n would be $n - 1$, and the number one more than n would be $n + 1$.

If we square n we get n^2. When we multiply $n - 1$ by $n + 1$, we get $(n-1)(n+1)$

$= n^2 + n - n - 1$

$= n^2 - 1$

Hence the rule always works! Try it with three other consecutive numbers.