

12:00pm 1/11/21 ACHA3000 2104322 p.91

1.)

(i) $x^6 \times x^8 \times x^2 \times x$

$$6+8+2=16 \quad 16+1=17$$

$$x = \boxed{x^{17}}$$

(ii) $(2x^2)^4 \times 3x^3$

$$16x^8 \times 3x^3$$

$$16 \times 3 = 48$$

$$8+3=11$$

$$= \boxed{48x^{11}}$$

(iii) $\frac{x^2 \times x^{10} \times x}{x^3}$

$$x^{10} \div x^3 = x^7$$

$$x^2 + x^7 + x = x^{10}$$

$$= \boxed{x^{10}}$$

(iv) $2\sqrt{x} \times 3\sqrt{x}$

2.)

i) $7x-1=5x+4$

$$(4-1)=(5x-7x)$$

~~$$37x=5x$$~~

$$5x-7x=2x$$

$$2x=5$$

$$x = \frac{5}{2} = \boxed{-2.5}$$

ii) $10(3x+2) = 7(-2x-1)$

$$10(3x+2) = 30x+20$$

$$7(-2x-1) = -14x-7$$

$$30x+20 = -14x-7$$

$$30x+20-20 = -14x-7-20$$

$$30x = -14x-27$$

$$30x+14x = -14x-27+14x$$

$$44x = -27$$

$$\frac{44x}{44} = \frac{-27}{44}$$

$$x = \frac{-27}{44}$$

3.)

$$i) x^2 + 9x + 14 = 0 \quad 2 \times 7$$

$$(x+2)(x+7)$$

$$x^2 + x + 2 = 0 \quad x+7=0$$

$$x = -2 \quad x = -7$$

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

$$17x^2 = -5x + 14$$

$$x = \frac{-5 \pm \sqrt{5^2 - 4(17)(14)}}{2(17)}$$

$$x = \frac{-5 \pm \sqrt{25 - 952}}{34}$$

$$x = \frac{-5 \pm \sqrt{927}}{34}$$

$$ii) x^2 - 7x + 10 = 0 \quad 5 \times 2$$

$$(x-2)(x-5)$$

$$x-2=0 \quad x-5=0$$

$$x=2 \quad x=5$$

$$iii) x^2 + 8x - 20 = 0$$

$$(x-2)(x+10) = 0$$

$$x-2=0 \quad x+10=0$$

$$x=2 \quad x=-10$$

$$iv) x^2 - 49 = 0$$

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

$$x+7=0 \quad x-7=0$$

$$x=-7 \quad x=7$$

$$v) 2x^2 - 3x - 20 = 0$$

5x4

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

$$2x+5=0 \quad x = -\frac{5}{2}$$

$$x-4=0 \quad x=4$$

$$x=2.5$$

-2x10

$$x = 0.75$$

$$x = -1.04$$

$$5.) 6x + 5y = 35 \quad (1)$$

$$7x - 4y = 31 \quad (2)$$

$$60x + 5y + (-6x) = 35 + (-6x)$$

$$5y = -60x + 35$$

$$\frac{5y}{5} = \frac{-60x + 35}{5}$$

$$5.) 6x + 5y = 35$$

$$7x - 4y = 31$$

$$x = 5$$

$$y = 1$$

(Ran out of time to write workings)

6). i) $10p^3q^2 - 5p^2q + 15p^4q$

$5p^2q - 10p^3q^2 + 10p^2pq - 5p^2q + 15p^2p^2p$

ii) $\frac{5pq(2p^2q - p + 3p^3)}{2x^2y - 4xy^2}$

$x^2y = xxy, xy^2 = xyy$

$= 2xxy - 4xyy$

$= 2xxy + 2 2xyy$

$= 2xy(x-y)$

7.)

~~7.1~~

$\cos x = \frac{550}{700}$

$\cos x = 0.78571$

$x = \cos^{-1}(0.78571)$

$x = 38.21$

$\boxed{= \text{Angle } Y = 38.21}$

~~7.2~~ $\tan 51.79 = \frac{550}{x2}$

$x2 = \frac{550}{\tan 51.79}$

$=$

$x2 = \frac{550}{1.27032}$

$=$

$\boxed{\text{DC Height} = 432.96}$

$x2 = 432.6m$