

27th October 2020

1901871

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1. ~~2~~

i. $x^2 + 8x + 15 = 0$

$(x+5)(x+3) = 0$

$x = 5 \quad x = 3$

ii. $x^2 - 225 = 0$

$(x^2 + 15)(x^2 - 15) = 0$

~~$x = \pm 15$~~ $x = \pm 15$

iii. $x^2 + 11x + 30 = 0$

$(x^2 + 6)(x+5) = 0$

$x = 6 \quad x = 5$

iv. $x^2 - 6x + 8 = 0$

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

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

v. $2x^2 + 9x + 7 = 0$

$(2x+7)(x+1) = 0$

$x = -\frac{7}{2} \quad x = -1$

2. $12x^2 + 5x = 7$

$x = -5 + \sqrt{\frac{25+336}{24}}$

$x = -5 - \sqrt{\frac{25+336}{24}}$

$x = -5 - \frac{19}{24}$

$x = -24$

$\frac{24}{24}$

$x = -1$

~~$12x^2 + 5x - 7 = 0$~~

$a \quad b \quad c \quad 12x^2 + 5x - 7 = 0$

$x = \frac{-5 + 19}{24}$

$x = \frac{14}{24}$

$\frac{-5 \pm \sqrt{5^2 - [4 \times 12 \times (-7)]}}{2 \times 12}$

2×12

$x = 0.58$

3. $5x + 2y = 22$

$5(4) + 2y = 22$

$x = 4 \quad y = 1$

$4x + 3y = 19$

$20 + 2y = 22$

$15x + 6y = 66$

$2y = 22 - 20$

$8x + 6y = 38$

$2y = 2$

$7x = 28$

$y = \frac{2}{2}$

$x = \frac{28}{7}$

$y = 1$

$x = 4$

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4.

i. $x^8 \times x \times x^9$

$8+1+9=18$

$= x^{18}$

ii. $(2x^3)^3 = 8x^9$

$2^3 = 8$

$3 \times 3 = 9$

$8x^9 = 8x^9$

iii. $\frac{x^{12} \times x^7}{x}$

$x^{12} \times x^7 = 12+7$

$= x^{19}$

iv. $5x^2 \times 3x^4$

$= 5 \times 3 = 15$

$= 2+4 = 6$

$= 15x^6$

v. $\frac{10x^8}{2x^5} = 5x^3$

5.

i. $2(x^2+y^2) + x^2(x-y) + 3xy - x^3$

$= 2x^2 + 2y^2 + x^3 - xy + 3xy - x^3$

$= 2x^2 + 2y^2 + 2xy$

$= 2x^2 + 2xy + 2y^2$

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6

i. $5(2x+1) = 4(3x+2)$

$$10x+5 = 12x+8$$

$$-3 = 2x$$

$$x = -\frac{3}{2} \text{ or } -1.5$$

ii. $12x+5 = 4x-1$

$$8x = -6$$

$$x = -\frac{6}{8}$$

$$x = -\frac{1}{4} \text{ or } -0.25$$

iii. $\frac{(4x-1)}{3} = \frac{(5x+2)}{2}$

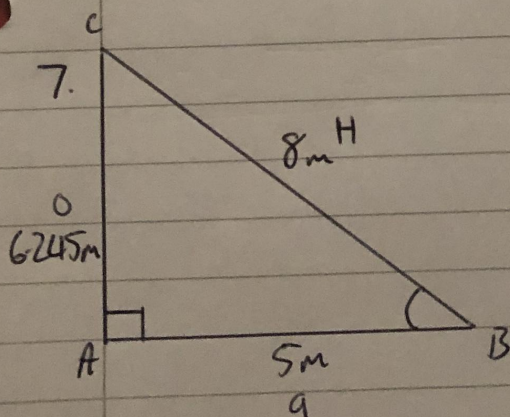
$$2 \cdot 2 \cdot \frac{(4x-1)}{3} = 2 \cdot 3 \cdot \frac{(5x+2)}{2}$$

$$2(4x-1) = 3(5x+2)$$

$$8x-2 = 15x+6$$

$$-8 = 7x$$

$$x = -\frac{8}{7} \text{ or } -1.14$$



i. Angle B

$$\frac{C}{H} = \cos \theta = \frac{5}{8}$$

$$\theta = \cos^{-1}\left(\frac{5}{8}\right)$$

$$\theta = 51.32^\circ$$

ii. Angle C

$$C = 180 - 90 - 51.32$$

$$C = 38.68^\circ$$

iii. Length AC

$$(BC)^2 = AC^2 + AB^2$$

$$AC^2 = \sqrt{BC^2 - AB^2}$$

$$AC = \sqrt{64 - 25}$$

$$AC = 6.245m$$