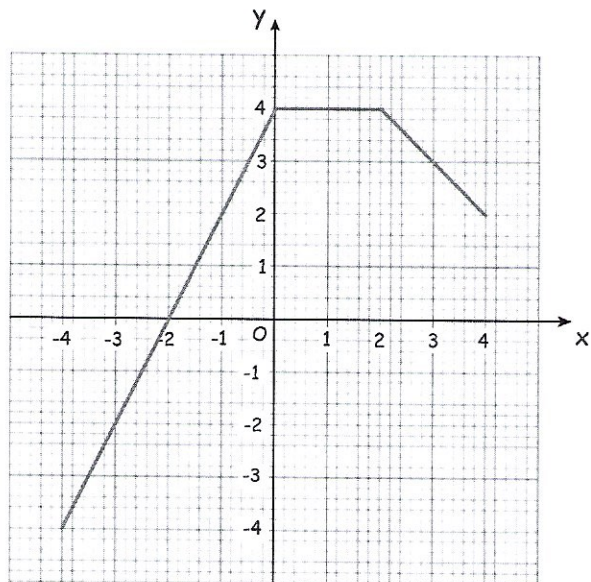


7th January



Corbettmaths

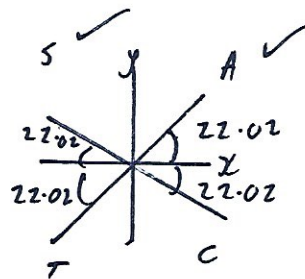


Define  $f(x)$ , stating clearly the domain for each part.

$$\begin{aligned} f(x) &= 2x + 4 & -4 \leq x < 0 \\ &= 4 & 0 \leq x < 2 \\ &= -x + 6 & 2 \leq x \leq 4 \end{aligned}$$

Solve  $8\sin\theta - 3 = 0$  for  
 $0^\circ \leq \theta \leq 360^\circ$

$$\begin{aligned} \sin\theta &= \frac{3}{8} \\ \sin^{-1}\left(\frac{3}{8}\right) &= 22.02^\circ \\ \theta &= 22.02^\circ, 157.98^\circ \end{aligned}$$



Rationalise and simplify  $\frac{17\sqrt{3} + 5\sqrt{5}}{2\sqrt{3} - \sqrt{5}}$

$$\frac{17\sqrt{3} + 5\sqrt{5}}{2\sqrt{3} - \sqrt{5}} \times \frac{(2\sqrt{3} + \sqrt{5})}{(2\sqrt{3} + \sqrt{5})}$$

$$\begin{aligned} &= \frac{102 + 17\sqrt{15} + 10\sqrt{15} + 25}{12 - 5} \\ &= \frac{127 + 27\sqrt{15}}{7} \end{aligned}$$

Prove  $\tan\theta\cos\theta \equiv \sin\theta$

$$\begin{aligned} \text{LHS} & \frac{\cancel{\sin\theta}}{\cancel{\cos\theta}} \times \frac{\cos\theta}{1} \\ &= \sin\theta \quad \text{QED} \end{aligned}$$