26th September

Corbettmaths

Given $f(x) = x^2 + 2$ and $g(x) = x + 14$

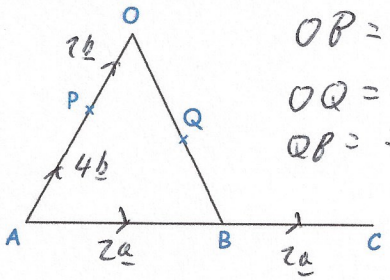
Find the values of a such that $f(a) = g(a)$

$a^2 + 2 = a + 14$

$a^2 - a - 12 = 0$

$(a-4)(a+3) = 0$

$a = 4$ or $a = -3$



$\overrightarrow{OP} = -6\underline{b} + 2\underline{a}$

$\overrightarrow{OQ} = -3\underline{b} + \underline{a}$

$\overrightarrow{QB} = -3\underline{b} + \underline{a}$

AOB is a triangle.
P is a point on AO.

$\overrightarrow{AB} = 2\underline{a}$ $\overrightarrow{AO} = 6\underline{b}$ AP:PO = 2:1

As $\overrightarrow{PQ}$ & $\overrightarrow{QC}$ are parallel & both pass through Q, PQC is a straight line.

Q is the midpoint of OB.
B is the midpoint of AC.

Show PQC is a straight line.

$\overrightarrow{PQ} = \overrightarrow{PO} + \overrightarrow{OQ}$

$= 2\underline{b} - 3\underline{b} + \underline{a}$

$= -\underline{b} + \underline{a}$

$\overrightarrow{QC} = \overrightarrow{QB} + \overrightarrow{BC}$

$= -3\underline{b} + \underline{a} + 2\underline{a}$

$= -3\underline{b} + 3\underline{a}$

$= 3(-\underline{b} + \underline{a})$

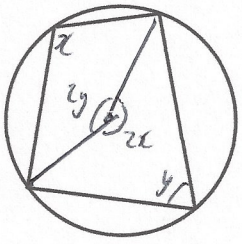
$= 3\overrightarrow{PQ}$

Simplify

$(81x^8)^{-\frac{3}{4}}$

$(81x^8)^{\frac{3}{4}} = 27x^6$

$(81x^8)^{-\frac{3}{4}} = \frac{1}{27x^6}$



as $2y + 2x = 360$

$x + y = 180$

Prove the opposite angles in a cyclic quadrilateral add to 180°