



Here is a circle, centre O, and the tangent to the circle at the point (2, -4).

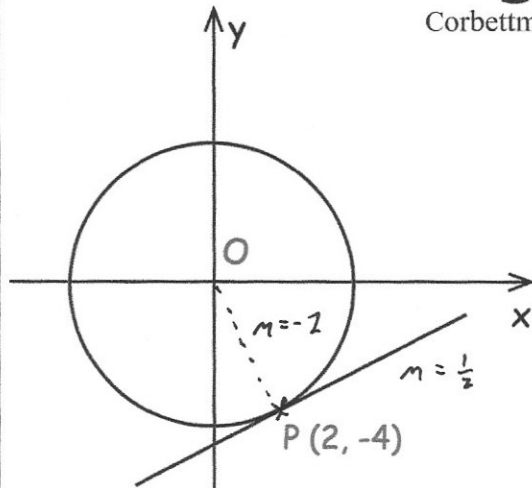
Find the equation of the tangent at the point P.

$$y = \frac{1}{2}x + c$$

$$-4 = 1 + c$$

$$c = -5$$

$$y = \frac{1}{2}x - 5$$

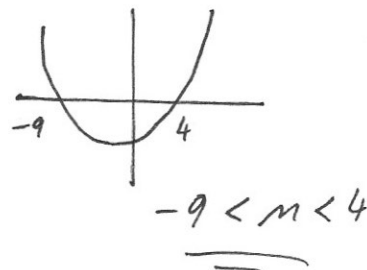


Solve

$$m^2 + 5m - 36 < 0$$

$$(m + 9) (m - 4)$$

$$\begin{matrix} -9 & 4 \end{matrix}$$



S is a geometric sequence

The first three terms of S are (x + 18), x and (2x - 15), where x is positive.

Find the value of x.

$$x = 9$$

$$\frac{x}{x+18} = \frac{2x-15}{x}$$

$$x^2 = (2x-15)(x+18)$$

$$x^2 = 2x^2 + 36x - 15x - 270$$

$$0 = x^2 + 21x - 270 \quad (x-9)(x+30) = 0$$

Find the 5th term of S

$$27 \xrightarrow{\div 3} 9 \xrightarrow{\div 3} 3 \xrightarrow{\div 3} 1 \xrightarrow{\div 3} \frac{1}{3}$$

$$\frac{1}{3}$$