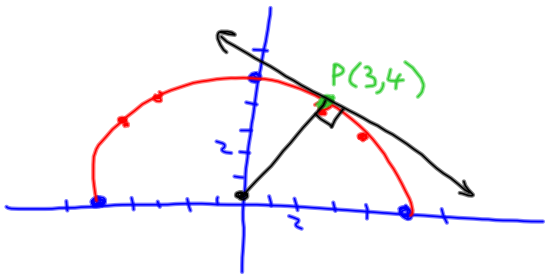
1.2

Q12

x	y
0	5
± 3	4
± 4	3
± 5	0



Note: Property of Circle Required
- Radius is perpendicular to tangent

Since slope of radius at P(3,4) is $\frac{4}{3}$
Thus slope of tangent at P(3,4) is $-\frac{3}{4}$

Q21 $f(x) = 3x^2 - 4x$

$$f(x+h) = 3(x+h)^2 - 4(x+h)$$
$$= 3(x^2+2xh+h^2) - 4x - 4h$$
$$= 3x^2 + 6xh + 3h^2 - 4x - 4h$$

Well, $\lim_{h\to 0} \frac{f(x+h) - f(x)}{h} = ?$

So $\lim_{h\to 0} \frac{(3x^2+6xh+3h^2-4x-4h) - (3x^2-4x)}{h}$

$$\therefore \lim_{h \to 0} \frac{6xh + 3h^2 - 4h}{h} = 8$$

$$\therefore \lim_{h \to 0} (6x + 3h - 4) = 8$$

Thus $6x + 3(0) - 4 = 8$

$6x = 12$

$x = 2$

And $f(2) = 3(2)^2 - 4(2)$

$= 12 - 8$

$= 4$

When $P = (2, 4)$.