11(a)	Substitute 4 to obtain gradient of curve is $\frac{1}{10}$
	Attempt equation of normal using $(4, 3)$ and $-\frac{1}{m}$ for their gradient
	$y = -10x + 43$
11(b)	$\{-16x^{-3}\}\{+40(2x-3)^{-3}\}$
	Substitute 4 to obtain $\frac{7}{100}$
11(c)	$[y =]\{-8x^{-1}\}\{+5(2x-3)^{-1}\}[+c]$
	Substitute $x = 4,\ y = 3$ in an integrated expression to find value of c
	Obtain $3 = -2 + 1 + c$ and hence $y = -8x^{-1} + 5(2x-3)^{-1} + 4$
	Substitute $x = -1$ to obtain $q = 11$

4(a)	$[k =]4$
4(b)	$\left\{\frac{k}{4}x^4\right\} + \left\{\frac{2x^{-2+1}}{-2+1}\right\}[+c]$
	$20 = \frac{their\ k}{4} \times 2^4 - \frac{2}{2} + c$
	$c = 5$
	$[t =]4$

5(a)	$\left[\frac{dy}{dx} =\right]2x^{-\frac{1}{2}} - 1$
	$2x^{-\frac{1}{2}} - 1 = 0 \Rightarrow x^{\frac{1}{2}} = 2$
	$[a =]4$
	Alternative Method for Question 5(a):
	$y = 4\sqrt{x} - (\sqrt{x})^2$
	Max at $\sqrt{x} = \frac{-b}{2a} = \frac{-4}{-2} = 2$ or $-(\sqrt{x} - 2)^2 + 4 \Rightarrow x^{\frac{1}{2}} = 2$
	$[a =]4$

5(b)	$\left[x = \text{or}\, b =\right] 16$
	$\left[\int\left(4x^{\frac{1}{2}} - x\right)\mathrm{d}x =\right]\left\{\frac{4}{\frac{3}{2}}x^{\frac{3}{2}}\right\} + \left\{-\frac{1}{2}x^2\right\}$
	[Area =] $\left(\frac{8}{3}\times 16^{\frac{3}{2}} - \frac{1}{2}\times 16^2\right) - \left(\frac{8}{3}\times 4^{\frac{3}{2}} - \frac{1}{2}\times 4^2\right)$
	$\left\{= \frac{128}{3} - \frac{40}{3}\right\} = \frac{88}{3}$ or $29\frac{1}{3}$

9(a)	$\frac{4\times 3\times(-2)}{(3x-6)^3} + \frac{1\times 3\times(-3)}{(3x-6)^4}$ or $4\times 3\times(-2)(3x-6)^{-3} + 1\times 3\times(-3)(3x-6)^{-4}$
	Decreasing.
9(b)	f^{-1} exists because f is a decreasing function Or f^{-1} exists because it is one-to-one, or passes the horizontal line test.
9(c)	$g(x) > 4a - 3$
9(d)	**Either** $4a - 3 > 2$ allow with x or a or $\geq$
	$a > \frac{5}{4}$ or $a \geqslant \frac{5}{4}$ oe
	Or $3\times(4a-3) - 6 > 0$ allow with x or a or $\geqslant$
	$a > \frac{5}{4}$ or $a \geqslant \frac{5}{4}$ oe

2(a)	[Gradient of tangent] $= 4(2\times4-5)^3 - 9\times4^{\frac{1}{2}}\ [=90]$
	[Gradient of normal] $= -\dfrac{1}{90}$
2(b)	$[y] = \left\{\dfrac{1}{2}(2x-5)^4\right\}\left\{-6x^{\frac{3}{2}}\right\}[+c]$
	$-\dfrac{11}{2} = \dfrac{1}{2}\times(2\times4-5)^4 - 6\times4^{\frac{3}{2}} + c$
	$y = \dfrac{1}{2}(2x-5)^4 - 6x^{\frac{3}{2}} + 2$

7(a)	$\left[\dfrac{dy}{dx} =\right]\ 8x - \dfrac{18}{x^3}$
	At $x = 2, \dfrac{dy}{dx} = \dfrac{55}{4}$
	$\dfrac{dy}{dx} = \dfrac{dy}{dt}\times\dfrac{dt}{dx} \Rightarrow \dfrac{55}{4} = -5\times\dfrac{dt}{dx}$
	$\left[\dfrac{dx}{dt} =\right]\ -\dfrac{4}{11}$

7(b)	$8x - \dfrac{18}{x^3} = 0\ \left[\Rightarrow x^4 = \dfrac{9}{4}\right]$
	$x = \pm\sqrt{\dfrac{3}{2}}$ or $\pm\dfrac{\sqrt{6}}{2}$
	$y = 4$ (for both)
	$\left[\dfrac{d^2y}{dx^2}\right] = 8 + \dfrac{54}{x^4}$
	So both are minima

4(a)	$\left[\frac{dy}{dx}\right] = \frac{3}{2}ax^{\frac{1}{2}} - 12$
	$\left[\frac{dy}{dt} = \frac{dy}{dx} \times \frac{dx}{dt} = \right] \left(\frac{3}{2}a \times 9^{\frac{1}{2}} - 12\right) \times 5$
	$\left[\frac{dy}{dt} = \right] 5\left(\frac{9}{2}a - 12\right)$ or $\frac{45}{2}a - 60$ or $22.5a - 60$ or $\frac{45a - 120}{2}$ or $\frac{15}{2}(3a - 8)$
4(b)	$\frac{3}{2}a \times \left(\frac{1}{4}\right)^{\frac{1}{2}} - 12 = 0$
	$\Rightarrow a = 16$

9(a)	$\left[\frac{dy}{dx} = \right] \frac{-24x^{-2}}{-2} \left[= \frac{12}{x^2}\right] [+c]$
	$\frac{12}{(-2)^2} + c = 0 \ [\Rightarrow c = -3]$
	$\left[\frac{dy}{dx} = \right] \frac{12}{x^2} - 3$ or $12x^{-2} - 3$

9(b)	$\left[\frac{12}{x^2} - 3 = 0 \Rightarrow x^2 = 4 \Rightarrow x = \pm 2 \Rightarrow\right] x = 2$
	$\left[\frac{d^2y}{dx^2} = \right] -\frac{24}{(2)^3}$ or -3 or $< 0 \Rightarrow$ maximum
9(c)	$[y =] -12x^{-1} + \mathit{their}\ cx \left[= -\frac{12}{x} - 3x\right] [+d]$
	$19 = -\frac{12}{-2} - 3 \times (-2) + d \ [\Rightarrow d = 7]$
	$y = -\frac{12}{x} - 3x + 7$

9(d)	$\frac{12}{x^2}-3=-\frac{9}{4} \Rightarrow \frac{12}{x^2}=\frac{3}{4} \Rightarrow x=...\left[\Rightarrow x^2=16 \Rightarrow x=4, y=-8\right]$
	Gradient of normal = $\frac{4}{9}$
	$\frac{y+8}{(x-4)}=\frac{4}{9}$
	$4x-9y-88=0$