

<p>1. Find the exact x-coordinates of the stationary point(s) of $f(x) = 0.25(x-3)^3 e^{x-3}$.</p>	<p>2. Refer to the function in Q1. Determine the nature (local minimum, local maximum or point of inflection) of each stationary point.</p>
<p>3. Refer to the function in Q1. Find the exact rate of change of $f(x)$ with respect to x at $x = 4$.</p>	<p>4. Refer to the function in Q1. Find the equations of (i) the tangent and (ii) normal at $x = 4$.</p>
<p>5. Find the exact coordinates of the stationary point(s) of the graph of $y = \sin\left(\frac{\pi\sqrt{4-x^2}}{2}\right)$.</p>	<p>6. Refer to the equation in Q5. Determine the nature of each stationary point.</p>
<p>7. Refer to the equation in Q5. Find the exact rate of change of y with respect to x at $x = \frac{4\sqrt{2}}{3}$.</p>	<p>8. Refer to the equation in Q5. Find the equations of (i) the tangent and (ii) normal at $x = \frac{4\sqrt{2}}{3}$.</p>
<p>9. Find the exact coordinates of the stationary point(s) of $f(x) = \sin\frac{\pi x}{12} + \cos\frac{\pi x}{12}$, where $-6 \leq x \leq 6$.</p>	<p>10. Refer to the function in Q9. Determine the nature of each stationary point.</p>
<p>11. Refer to the function in Q9. Find the equations of (i) the tangent and (ii) normal at $x = 0$.</p>	<p>Numerical, algebraic and worded answers.</p> <p>1. 0, 3 2. Local min; infl. point 3. e 4. $y = e(x-15/4)$ $y = (-1/e)(x-4-e^2/4)$ 5. (0,0); $(-\sqrt{3}, 1)$; $(\sqrt{3}, 1)$ 6. Local max; local min; local max 7. $-\pi/\sqrt{2}$ 8. $y = (-\pi/\sqrt{2})x + 4\pi/3 + \sqrt{3}/2$ $y = (\sqrt{2}/\pi)x - 8/(3\pi) + \sqrt{3}/2$ 9. (3, $\sqrt{2}$) 10. Local max 11. $y = (\pi/12)x + 1$ $y = (-12/\pi)x + 1$</p>