

Lesson 8 Homework

9. The function $f : R \rightarrow R, f(x) = 6\log_e(x^2 - 4x + 8)$ has one stationary point.
- Use calculus to determine the coordinates of this stationary point.
 - Determine the nature of this stationary point.

Don't sketch; just find the stationary point (for the next question)

10. Sketch the following functions by determining their stationary points and any axis intercepts. State the range of each function.

a. $y = x^4 - 4x^3$

b. $y = \frac{4}{x^2 + 1}$

7. Given that $y = (x^2 + 1)e^{3x}$, determine the equation of the tangent to the curve at $x = 0$.

3. Use the Null Factor Law to solve the following quadratic equations for x .

a. $(3x - 4)(2x + 1) = 0$

b. $x^2 - 7x + 12 = 0$

c. $8x^2 + 26x + 21 = 0$

d. $10x^2 = 2x$

e. $12x^2 + 40x - 32 = 0$

f. $\frac{1}{2}x^2 - 5x = 0$

Only do over $0 \leq x \leq 2\pi$ (ignore the other domains)

16. Solve the following equations for x .

a. $\sqrt{6} \cos(x) = -\sqrt{3}, 0 \leq x \leq 2\pi$

b. $2 - 2 \cos(x) = 0, 0 \leq x \leq 4\pi$

c. $2 \sin(x) = \sqrt{3}, -2\pi \leq x \leq 2\pi$

d. $\sqrt{5} \sin(x) = \sqrt{5} \cos(x), 0 \leq x \leq 2\pi$

e. $8 \sin(3x) + 4\sqrt{2} = 0, -\pi \leq x \leq \pi$