



Subject: Calculus

Chapter: Unit 2

Category: Practice questions

For problems below find the derivative of the given function.

$$1. f(x) = 6x^3 - 9x + 4$$

$$2. y = 2t^4 - 10t^2 + 13t$$

$$3. g(z) = 4z^7 - 3z^{-7} + 9z$$

$$4. f(x) = 10\sqrt[5]{x^3} - \sqrt{x^7} + 6\sqrt[3]{x^8} - 3$$

$$5. f(t) = \frac{4}{t} - \frac{1}{6t^3} + \frac{8}{t^5}$$

$$6. R(z) = \frac{6}{\sqrt{z^3}} + \frac{1}{8z^4} - \frac{1}{3z^{10}}$$

$$7. z = x(3x^2 - 9)$$

$$8. g(y) = (y - 4)(2y + y^2)$$

$$9. h(x) = \frac{4x^3 - 7x + 8}{x}$$

$$10. f(t) = (4t^2 - t)(t^3 - 8t^2 + 12)$$

$$11. y = (1 + \sqrt{x^3})(x^{-3} - 2\sqrt[3]{x})$$

$$12. g(x) = \frac{6x^2}{2-x}$$

$$13. R(w) = \frac{3w + w^4}{2w^2 + 1}$$

$$14. R(w) = 3^w \log(w)$$

$$15. y = z^5 - e^z \ln(z)$$

$$16. f(x) = (6x^2 + 7x)^4$$

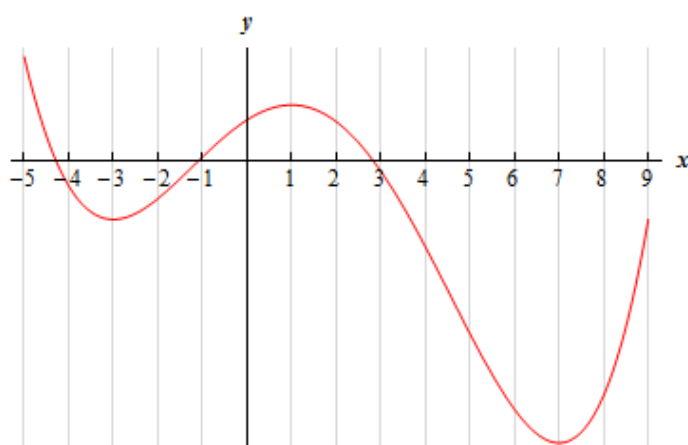
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17. $f(t) = 5 + e^{4t+t^7}$

18. Find two positive numbers whose product is 750 and for which the sum of one and 10 times the other is a minimum

19. Determine the critical points of $f(x) = 5x e^{9-2x}$

20. The graph of a function is given below. Determine the intervals on which the function increases and decreases.



21. Differentiate y with respect to x :

a. $y = \frac{3}{4x^2} - \frac{12}{x^2\sqrt{x}}$

b. $y = \frac{1}{3x} + \frac{2x^3+1}{3\sqrt{x}}$

22. Find an equation of the tangent to the curve at the point whose x coordinate is given:
 $y = x^2 - 9x + 13$ where $x = 6$

23. Find the coordinates of their stationary points : $y = x - 4\sqrt{x}$ where $x > 0$

24. Find the range of the values of x , for which $f(x) = x^3 - 3x^2 - 9x + 10$ is increasing.

25. Find the range of the values of x , for which $f(x) = 4x^3 - 3x^2 - 6x$ is decreasing.