

3. For each of the following functions, find all antiderivatives:

(a) $f(x) = 4x + 3$

(b) $f(x) = 4 \sin(x) + \sec^2(x)$

(c) $f(x) = \sqrt{x} - 2x^{-3} + (x - 3)^2$.

(d) $f(x) = \sin(x) \cos(x)$

4. Use the given information to determine the function f :

(a) $f'(x) = 3x^2 + \sin(2x)$ and $f(0) = 5/2$

(b) $f''(x) = 35x^{3/2} - 9 \sin(3x)$ and $f'(0) = 11$, $f(0) = -5$.

(c) $f'''(x) = \cos(x)$ and $f(0) = 1$, $f'(0) = 2$, $f''(0) = -3$.

5. A squirrel climbs a thin vertical tree trunk. Suppose that, when t seconds have passed, the squirrel's velocity is $v(t) = t^3 - 12t^2 + 35t$ feet per second. What is the squirrel's displacement after 8 seconds?

6. Suppose you have \$1000 to spend on fencing a rectangular plot of land with sides parallel to the cardinal directions. If the east and west sides of the plot cost \$10 per foot to fence and the north and south sides cost \$5 per foot, what is the largest amount of land you can enclose?

7. Which point on the parabola defined by $y = x^2$ is closest to the point $(3, 0)$?