Section 4.9: Additional Problems

1. Find $f(x)$. You might consider doing some algebra steps before finding the antiderivative.

   (a) $f'(x) = \dfrac{x^4 + 20x^2 + 40}{5x^3}$

   (b) $f'(x) = \dfrac{3}{1+x^2} + \dfrac{7}{e^{2x}} + \dfrac{15}{\sqrt{x}} + e^2$

   (c) $f'(x) = (x\sqrt{x} + \dfrac{7}{x^2} + 3)$

   (d) $f'(x) = (x^2+5)(x^4+6)$

   (e) $f'(x) = e^{4x} + \dfrac{2}{x}$

   (f) $f'(x) = \dfrac{e^{4x} + 7e^{2x}}{e^x}$

   (g) $f'(x) = \dfrac{e^{5x} + 2xe^{2x}}{e^{2x}}$

   (h) $f'(x) = (x^2 - 3x + 1)^2$

   (i) $f'(x) = \sqrt[4]{x^5} + \dfrac{1}{\sqrt[3]{x^2}}$

2. Find $r(t)$ given that $r'(t) = \langle 4\sec^2(4t), \sin(5t)\rangle$

3. Find $f(x)$ when $f''(x) = 12x^2 - 6x + 2$ when $f(0) = 1$ and $f(2) = 0$

4. A car braked with a constant deceleration of 40ft/sec^2, producing skid marks measuring 160ft before coming to a stop. How fast was the car traveling when the brakes were first applied?

5. A car is traveling at 60 mi/hr when the brakes are fully applied, producing a constant deceleration of 22 ft/s^2. The reason for the brakes being fully applied is that the driver noticed a cow in the road 160 feet infront of the car. Assume that the cow is not inclined to move.

   (a) Did the driver hit the cow?

   (b) What should the constant deceleration so that the car stops 10 feet away from the cow?