MAT 176 Solution to HW 5

1 a) $\frac{d}{dx}\left(3x^5 - 4x^2 + 2x - 3\right) = 15x^4 - 8x + 2$

b) $\frac{d}{dx}\left(7\sqrt{x} + \frac{\sqrt{7}}{\sqrt{x}} + \sqrt{7}\right) = \frac{7}{2\sqrt{x}} + \sqrt{7}\left(-\frac{1}{2}x^{-3/2}\right)$

$= \frac{7}{2\sqrt{x}} - \frac{\sqrt{7}}{2x\sqrt{x}}$

c) $\frac{d}{d\theta}\left(2\sin\theta + 4\cos\theta\right) = 2\cos\theta - 4\sin\theta$

d) $\frac{d}{dt}\left(2t^4 + e^t + 6\right) = 8t^3 + e^t$

e) $\frac{d}{dt}\left(\frac{1}{t^8} + 4\sin t + 2t^{3/5}\right) = -8t^{-9} + 4\cos t + \frac{6}{5}t^{-2/5}$

$= -\frac{8}{t^9} + 4\cos t + \frac{6}{5t^{2/5}}$