Section 10.2, problem 22:

$$\lim_{x\to\infty} \frac{2x-4}{3-2x} = \lim_{x\to\infty} \frac{2\cancel{x}}{-2\cancel{x}} = \frac{2}{-2} = -1$$

Section 11.1, problem 12:

$$\begin{aligned} y' &= \lim_{h\to 0} \frac{(x+h)^2 + 3(x+h) + 2 - (x^2+3x+2)}{h} \\ &= \lim_{h\to 0} \frac{\cancel{x^2} + 2xh + h^2 + \cancel{3x} + 3h + \cancel{2} - \cancel{x^2} - \cancel{3x} - \cancel{2}}{h} \\ &= \lim_{h\to 0} \frac{\cancel{h}(2x+h+3)}{\cancel{h}} = \lim_{h\to 0} 2x + h + 3 = 2x + 3 \end{aligned}$$

Section 11.2, problem 32:

$$p(x) = \frac{x^7}{7} + \frac{2x}{3} = \frac{1}{7}x^7 + \frac{2}{3}x \quad \Longrightarrow \quad p'(x) = \frac{1}{7}\cdot(7x^6) + \frac{2}{3}\cdot 1 = x^6 + \frac{2}{3}.$$

Section 11.2, problem 80:

First differentiate:

$$y' = \left(\frac{1-x^2}{5}\right)' = \left(\frac{1}{5} - \frac{1}{5}x^2\right)' = -\frac{1}{5}\cdot 2x = -\frac{2}{5}x.$$

Next, evaluate y' at the point $x = 4$, to find the slope of the tangent line:

$$y'(4) = -\frac{2}{5}\cdot 4 = -\frac{8}{5}.$$

Finally, use the point-slope formula to find the equation of the tangent line:

$$y - (-3) = -\frac{8}{5}(x-4) \implies y = -3 - \frac{8}{5}(x-4).$$