

$$1b) (a) \lim_{x \rightarrow \infty} \frac{5 - 2x^{3/2}}{3x^2 - 4} = 0$$

$$(b) \lim_{x \rightarrow \infty} \frac{5 - 2x^{3/2}}{3x^{3/2} - 4} = -\frac{2}{3}$$

$$(c) \lim_{x \rightarrow \infty} \frac{5 - 2x^{3/2}}{3x - 4} = -\infty \quad (\text{Limit does not exist})$$

$$1c) 2/3$$

$$1d) 0$$

$$1e) \text{DNE } (-\infty)$$

$$1f) 5/10 = 1/2$$

$$2b) \lim_{x \rightarrow -\infty} \left( \frac{5}{x} - \frac{x}{3} \right) \\ = (0 - -\infty) \\ = \infty$$

$$2c) \lim_{x \rightarrow -\infty} \left( \frac{1}{2}x - \frac{4}{x^2} \right) \\ = (-\infty - 0) \\ = -\infty$$

$$3b) \lim_{x \rightarrow \infty} \frac{\sqrt{x^2 - 1}}{2x - 1} \\ = \lim_{x \rightarrow \infty} \frac{\sqrt{x^2 - 1}}{\sqrt{(2x - 1)^2}} \\ = \lim_{x \rightarrow \infty} \sqrt{\frac{x^2 - 1}{(2x - 1)^2}} \\ = \lim_{x \rightarrow \infty} \sqrt{\frac{x^2 - 1}{4x^2 - 4x + 1}} \\ = \sqrt{\frac{1}{4}} = 1/2$$