3.5 Limits at Infinity (H.A.) p.202-205

#1, 3, 5, 13-33 odd, 54, 55, 57

* Compare degrees between numerator and denominator

17) a) $\lim_{x\to\infty} \frac{5-2x^{3/2}}{3x^2-4} = \boxed{0}$

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

c) $\lim_{x\to\infty} \frac{5-2x^{3/2}}{3x-4} = \boxed{-\infty}$

19) $\lim_{x\to\infty} 4+\frac{3}{x} = \lim_{x\to\infty} \frac{4x+3}{x} = \boxed{4}$

25) $\lim_{x\to-\infty} \frac{5x^2}{x+3} = \frac{5(-\infty)^2}{-\infty+3} = \frac{+}{-} = \boxed{-\infty}$

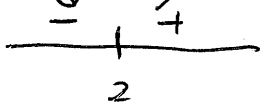
27) $\lim_{x\to-\infty} \frac{x}{\sqrt{x^2-x}} = -\frac{x}{\sqrt{x^2-x}} = \boxed{-1}$

29) $\lim_{x\to-\infty} \frac{2x+1}{\sqrt{x^2-x}} = \lim_{x\to-\infty} \frac{2x+1}{-\sqrt{x^2}} = \frac{2}{-1} = \boxed{-2}$

55) Sketch graph:

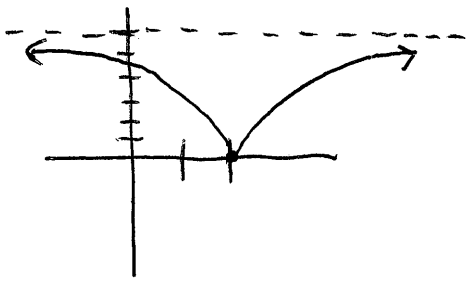
$f'(x)<0$ for $x<2$

$f'(x)>0$ for $x>2$



$\lim_{x\to-\infty} f(x) = 6$

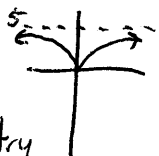
$\lim_{x\to\infty} f(x) = 6$



57) $\lim_{x\to\infty} f(x) = 5$

a) If symmetric about y-axis

$\lim_{x\to-\infty} f(x) = 5$



b) If origin symmetry

$\lim_{x\to-\infty} f(x) = -5$