Midterm 1 Review Key
(from class notes)

Ex 1: (a) 0 (b) $\frac{-3}{7}$ (c) $-\infty$

Ex 2: (a) 2 (b) $\frac{19}{8}$

Ex 3: (a) DNE (because the right and left hand limits are not the same)
(b) ∞

Ex 4: VA at x=5; holes at x=0, -2; only the holes are patchable

Ex 5: (a) $f'(x)=\frac{-1}{(2x-1)^{3/2}}$ (b) $f'(x)=3x^2$

Ex 6: (a) $y'=sec^2 x-\sin x$ (b) $y'=(-15x^{-6}+2\pi x)(x^{-6}+9)+(3x^{-5}+\pi x^2-7)(-6x^{-7})$
(c) $y'=\frac{(x+1)(x^2+1)(8x+3)-(4x^2+3x-8)[1(x^2+1)+(x+1)(2x)]}{(x+1)^2(x^2+1)^2}$

Ex 7: $y=-\frac{3}{2}x+\frac{1}{2}$

Ex 8: $\lim_{x\to 1^+} f(x)=4$, $\lim_{x\to 1^-} f(x)$ DNE , $\lim_{x\to 3} f(x)=0$, f(3) DNE , f(0) DNE
This function is continuous on the interval $[-4, 0)\cup[1, 3)\cup(3,\infty)$.
At x = 3, there is a hole.