

Spring 2008 Math 151

Week in Review # 8

sections: 4.6, 4.8, 5.1

courtesy: Joe Kahlig

Section 4.6

1. Find the exact value of the following without the aid of a calculator.

- (a) $\sin^{-1}\left(\frac{-1}{2}\right)$
- (b) $\arccos\left(\frac{-\sqrt{2}}{2}\right)$
- (c) $\arctan(-\sqrt{3})$
- (d) $\tan(\arctan(1.25))$
- (e) $\sin(\arcsin(\frac{\pi}{2}))$
- (f) $\sin^{-1}(\sin(\frac{\pi}{2}))$
- (g) $\arccos(\cos(\frac{5\pi}{4}))$
- (h) $\arctan(\tan(\frac{17\pi}{10}))$
- (i) $\tan(\arccos(\frac{-5}{13}))$
- (j) $\sec(\arctan(\frac{2}{3}))$
- (k) $\sin(2\arctan(\frac{2}{3}))$

2. Write $\tan(\cos^{-1}x)$ without any trig functions.

3. Find the derivatives of the following.

- (a) $y = \tan^{-1}(5x)$
- (b) $y = x^2 \arcsin(x^2)$
- (c) $y = (\cos^{-1}(7x))^3$

Section 4.8

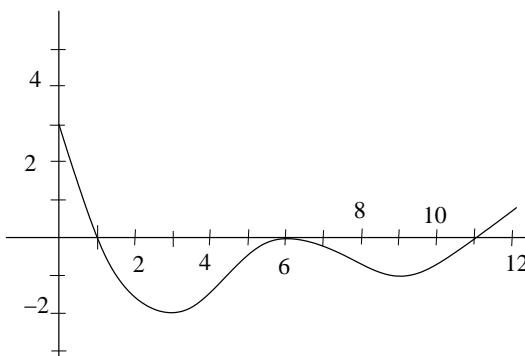
- 4. $\lim_{x \rightarrow 0} \frac{\sin(x) - x}{x^3}$
- 5. $\lim_{x \rightarrow \infty} \frac{\ln(x + e^{3x})}{2x}$
- 6. $\lim_{x \rightarrow 0} \frac{e^x + e^{-x}}{x^2}$
- 7. $\lim_{x \rightarrow \infty} \left(\frac{x^2}{x-1} - \frac{x^2}{x+5} \right)$
- 8. $\lim_{x \rightarrow \frac{\pi}{2}} (2x - \pi) \tan(x)$
- 9. $\lim_{x \rightarrow 0^+} x^x$
- 10. $\lim_{x \rightarrow 0} (1 - 5x)^{\frac{1}{x}}$

Section 5.1

Answer these questions for each of the graphs.

- (A) On what intervals is f increasing? decreasing?
- (B) On what intervals is f concave up? concave down?
- (C) At what values of x does f have a local maximum or minimum?
- (D) At what values of x does f have an inflection point?
- (E) Assuming that f is continuous and $f(0) = 0$, sketch a graph of f .

11. The graph of the derivative, $f'(x)$, is shown below.



12. The graph of the derivative, $f'(x)$, is shown below.

