

Math 116  
Homework 07

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### 9.3

4. Simplify, and indicate where the simplification is valid:

(a)  $\sin(\tan^{-1}(x))$

(b)  $\tan(\sec^{-1}(x))$

(c)  $\sec(\sin^{-1}(x))$

(d)  $\sin(2\tan^{-1}(x))$

(*Hint:* Use the fact that  $\sin(2x) = 2\sin(x)\cos(x)$ )

### 10.4

2. Factor the following expression, if possible:

$$x^3 - 7x + 6$$

### 10.5

6. Rationalize the top or bottom, and simplify.

$$\frac{x^4 - 36}{x + \sqrt{6}}.$$

8. Let

$$f(x) = \frac{1}{\sqrt{2x}}.$$

Calculate

$$\frac{f(x+h) - f(x)}{h}$$

and simplify.

### 11.1

2. Let  $f(x) = 2x^2 - 2x$ .

(a) Compute  $f(x+h)$ .

(b) Simplify

$$\frac{f(x+h) - f(x)}{h}.$$