

### 3.5 Selecting Procedures for Determining Derivatives

Calculus

Name: \_\_\_\_\_

1. If  $x^2 - 2xy + 3y^2 = 8$ , then  $\frac{dy}{dx} =$

- (A)  $\frac{8+2y-2x}{6y-2x}$       (B)  $\frac{3y-x}{y-x}$       (C)  $\frac{2x-2y}{6y-2x}$       (D)  $\frac{1}{3}$       (E)  $\frac{y-x}{3y-x}$

2. If  $f(x) = \cos(e^{-x})$ , then  $f'(x) =$

- (A)  $-\sin(e^{-x})$       (B)  $\sin(e^{-x})$       (C)  $\sin(e^{-x}) - e^{-x}$   
 (D)  $e^{-x} \sin(e^{-x})$       (E)  $-e^{-x} \sin(e^{-x})$

3. If  $f(x) = \arcsin x$ , then  $\lim_{x \rightarrow \frac{1}{2}} \frac{f(x) - f(\frac{1}{2})}{x - \frac{1}{2}}$  is

- (A) 0      (B)  $\frac{\pi}{6}$       (C)  $\frac{2}{\sqrt{3}}$       (D) nonexistent

4. Find  $\lim_{h \rightarrow 0} \frac{(x+h)^9 \sin(x+h)^2 - x^9 \sin x^2}{h}$

- (A)  $x^8(2x \sin x \cos x + 9 \sin x^2)$       (B) 0      (C)  $x^8(2x^2 \cos x^2 + 9 \sin x^2)$   
 (D)  $\infty$       (E) The limit does not exist.

5. The table below gives selected values for a differentiable function  $f$  and its derivative. If  $f^{-1}$  is the inverse function of  $f$ , what is the value of  $(f^{-1})'(10)$ ?

$x$	$f(x)$	$f'(x)$
0	21	3
5	10	-6
10	-3	-60

- (A) -60      (B)  $-\frac{1}{6}$       (C)  $-\frac{1}{60}$       (D)  $\frac{1}{60}$       (E)  $\frac{1}{6}$