

## Calculus- Chapter 6 Practice Quiz

**SHORT ANSWER.** Write the word or phrase that best completes each statement or answers the question.

Find the general solution to the exact differential equation.

1)  $\frac{dy}{dx} = \csc^2 x - 25x^4$

1) \_\_\_\_\_

2)  $\frac{dy}{dt} = 8\sqrt{t} + 6(\cos t)e^{\sin t}$

2) \_\_\_\_\_

Solve the initial value problem explicitly.

3)  $\frac{dy}{dx} = \sin(2x + \pi)$ ,  $y = 6$  when  $x = 0$

3) \_\_\_\_\_

4)  $\frac{du}{dx} = 10x^9 - 4x^3 + 5$  and  $u = 2$  when  $x = 1$

4) \_\_\_\_\_

Solve the initial value problem using the Fundamental Theorem. Your answer will contain a definite integral.

5)  $G'(x) = e^{\sin x}$  and  $G(4) = 10$

5) \_\_\_\_\_

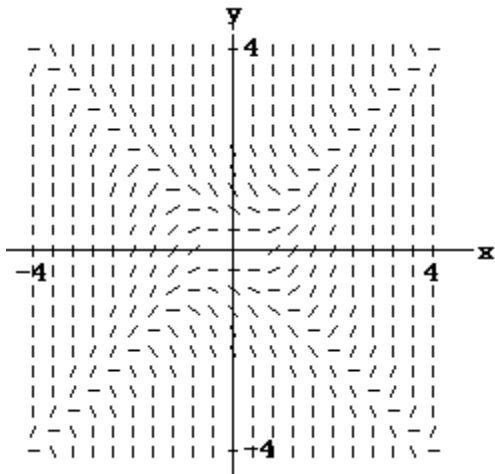
**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

Match the differential equation with the appropriate slope field.

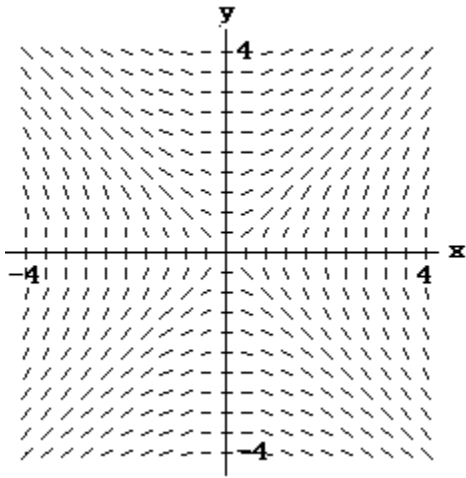
6)  $y' = \frac{x}{y}$

6) \_\_\_\_\_

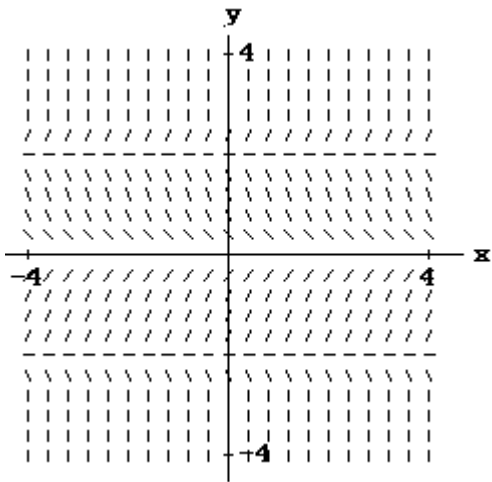
A)



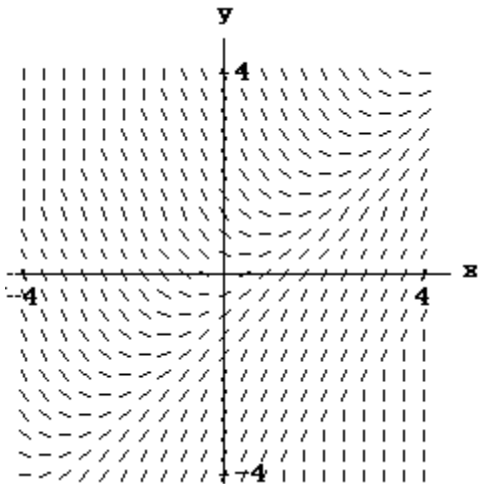
B)



C)



D)



**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

**Evaluate the integral.**

7)  $\int \frac{\cos(6\theta + 4)}{\sin^2(6\theta + 4)} d\theta$

7) \_\_\_\_\_

8)  $\int \frac{1}{\cot(4x - 5)} dx$

8) \_\_\_\_\_

9)  $\int 9x^2 \sqrt[4]{8 + 2x^3} dx$

9) \_\_\_\_\_

10)  $\int \frac{dx}{x \ln x^4}$

10) \_\_\_\_\_

**Solve the initial value problem.**

11)  $\frac{dy}{dx} = x \sin 4x$  and  $y = 4$  when  $x = 0$

11) \_\_\_\_\_

12)  $\frac{dy}{dx} = x e^{-2x}$  and  $y = 6$  when  $x = 0$

12) \_\_\_\_\_

**Use tabular integration to find the antiderivative.**

13)  $\int x^3 \cos 6x dx$  (fair warning—I could replace  $\cos 6x$  with  $e^{-2x}$  for the test...)

13) \_\_\_\_\_

## Answer Key

### Testname: CHAPTER 6 CALCULUS PRACTICE QUIZ

$$1) y = -\cot x - 5x^5 + C$$

$$2) y = \frac{16}{3}t^{3/2} + 6e^{\sin t} + C$$

$$3) y = -\frac{1}{2} \cos(2x + \pi) + \frac{11}{2}$$

$$4) u = x^{10} - x^4 + 5x - 3$$

$$5) G(x) = \int_4^x e^{\sin t} dt + 10$$

$$6) B$$

$$7) -\frac{1}{6 \sin(6\theta + 4)} + C$$

$$8) -\frac{1}{4} \ln |\cos(4x - 5)| + C$$

$$9) \frac{6}{5}(8 + 2x^3)^{5/4} + C$$

$$10) \frac{1}{4} \ln(\ln x^4) + C$$

$$11) y = -\frac{x \cos 4x}{4} + \frac{\sin 4x}{16} + 4$$

$$12) y = -\frac{xe^{-2x}}{2} - \frac{e^{-2x}}{4} + \frac{25}{4}$$

$$13) \frac{1}{6}x^3 \sin 6x + \frac{1}{12}x^2 \cos 6x - \frac{1}{36}x \sin 6x - \frac{1}{216} \cos 6x + C$$