Name : _____ Score : _____

Teacher : _____ Date : _____

Separable Equations

Find the general solution of each equation.

1) $\frac{dy}{dx} = y(4x - 2)$

2) $\frac{dy}{dx} = \frac{x^4}{4e^y}$

3) $\frac{dy}{dx} = \frac{2}{\sin(y)}$

4) $\frac{dy}{dx} = \frac{-12x}{y}$

5) $\frac{dy}{dx} = 2y(x^2 - 10)$

6) $\frac{dy}{dx} = e^{2x+y}$

7) $\frac{dy}{dx} = 2y(x - 4)$

8) $\frac{dy}{dx} = \frac{10x}{y}$

9) $\frac{dy}{dx} = \frac{e^{3x}}{y^3}$

10) $\frac{dy}{dx} = \frac{x^3}{2y^3}$

11) $\frac{dy}{dx} = e^{x-3y}$

12) $\frac{dy}{dx} = e^{x+3y}$

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Teacher : _____ Date : _____

Separable Equations

Find the general solution of each equation.

13) $\frac{dy}{dx} = \frac{3}{12\sec^2(y)}$

14) $\frac{dy}{dx} = \frac{x + 14}{y^4}$

15) $\frac{dy}{dx} = 2xe^{4y}$

16) $\frac{dy}{dx} = \frac{-x}{13y}$

17) $\frac{dy}{dx} = \frac{2e^x}{2y}$

18) $\frac{dy}{dx} = \frac{x^4}{y^2}$

19) $\frac{dy}{dx} = \frac{4x}{e^{2y}}$

20) $\frac{dy}{dx} = e^{4x-y}$

21) $\frac{dy}{dx} = \frac{e^{2x}}{4y}$

22) $\frac{dy}{dx} = xe^{3y}$

23) $\frac{dy}{dx} = 15e^{x-y}$

24) $\frac{dy}{dx} = \frac{x^2 - 9}{y^2}$

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Separable Equations

Find the general solution of each equation.

1) $\frac{dy}{dx} = y(4x - 2)$

$y = Ce^{(2x^2 - 2x)}$

2) $\frac{dy}{dx} = \frac{x^4}{4e^y}$

$y = \ln(\frac{1}{20}x^5 + C)$

3) $\frac{dy}{dx} = \frac{2}{\sin(y)}$

$y = \cos^{-1}(-2x + C)$

4) $\frac{dy}{dx} = \frac{-12x}{y}$

$y = \sqrt{-12x^2 + C}$

5) $\frac{dy}{dx} = 2y(x^2 - 10)$

$y = Ce^{(\frac{2}{3}x^3 - 20x)}$

6) $\frac{dy}{dx} = e^{2x+y}$

$y = -\ln(\frac{-1}{2}e^{2x} - C)$

7) $\frac{dy}{dx} = 2y(x - 4)$

$y = Ce^{(x^2 - 8x)}$

8) $\frac{dy}{dx} = \frac{10x}{y}$

$y = \sqrt{10x^2 + C}$

9) $\frac{dy}{dx} = \frac{e^{3x}}{y^3}$

$y = \sqrt[4]{\frac{4}{3}(e^{3x} + C)}$

10) $\frac{dy}{dx} = \frac{x^3}{2y^3}$

$y = \sqrt[4]{\frac{1}{2}x^4 + C}$

11) $\frac{dy}{dx} = e^{x-3y}$

$y = \frac{1}{3}\ln(3e^x + C)$

12) $\frac{dy}{dx} = e^{x+3y}$

$y = \frac{-1}{3}\ln(-3e^x - C)$

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Separable Equations

Find the general solution of each equation.

13) $\frac{dy}{dx} = \frac{3}{12\sec^2(y)}$

$y = \tan^{-1}(\frac{1}{4}x + C)$

14) $\frac{dy}{dx} = \frac{x + 14}{y^4}$

$y = \sqrt[5]{\frac{5}{2}x^2 + 70x + C}$

15) $\frac{dy}{dx} = 2xe^{4y}$

$y = \frac{-1}{4}\ln(-4x^2 + C)$

16) $\frac{dy}{dx} = \frac{-x}{13y}$

$y = \sqrt{\frac{-1}{13}x^2 + C}$

17) $\frac{dy}{dx} = \frac{2e^x}{2y}$

$y = \sqrt{2e^x + C}$

18) $\frac{dy}{dx} = \frac{x^4}{y^2}$

$y = \sqrt[3]{\frac{3}{5}x^5 + C}$

19) $\frac{dy}{dx} = \frac{4x}{e^{2y}}$

$y = \frac{1}{2}\ln(4x^2 + C)$

20) $\frac{dy}{dx} = e^{4x-y}$

$y = \ln(\frac{1}{4}e^{4x} + C)$

21) $\frac{dy}{dx} = \frac{e^{2x}}{4y}$

$y = \sqrt{\frac{1}{4}(e^{2x} + C)}$

22) $\frac{dy}{dx} = xe^{3y}$

$y = \frac{-1}{3}\ln(\frac{3}{2}x^2 + C)$

23) $\frac{dy}{dx} = 15e^{x-y}$

$y = \ln(15e^x + C)$

24) $\frac{dy}{dx} = \frac{x^2 - 9}{y^2}$

$y = \sqrt[3]{x^3 - 27x + C}$