

1. (1 point) Library/ASU-topics/setComplexNumbers/srw3_4_49.pg
Evaluate the expression $\frac{1+\sqrt{-25}}{2+\sqrt{-1}}$ and write the result in the form $a + bi$.

The real number a equals _____
The real number b equals _____

2. (1 point) Library/ASU-topics/setComplexNumbers/srw3_4_23.pg
Evaluate the expression $(2 + 4i)(-4 - i)$ and write the result in the form $a + bi$.

The real number a equals _____
The real number b equals _____

3. (1 point) Library/Utah/Intermediate_Algebra/set8_Quadratic_Equations_Functions_and_Inequalities/s8p13.pg
Let $u = a + bi$ and $v = c + di$. Complete the following equations. Your answers will be algebraic expressions.

$u + v = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} i$
 $u - v = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} i$
 $u \times v = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} i$
 $u/v = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} i$

4. (1 point) Library/FortLewis/DiffEq/2-Higher-order/04-Mechanical-vibrations/trig-identity.pg
(a) Using a trig identity, write $x(t) = 4\cos(6t) - 2\sin(6t)$ using only one cosine function.

$x(t) = \underline{\hspace{2cm}}$ help (formulas)

(b) Using a trig identity, write $x(t) = -4\cos(6t) - 2\sin(6t)$ using only one cosine function.

$x(t) = \underline{\hspace{2cm}}$ help (formulas)

(c) Using a trig identity, write $x(t) = e^{-2t}(4\cos(6t) - 2\sin(6t))$ using only one cosine function in your answer.

$x(t) = \underline{\hspace{2cm}}$ help (formulas)

5. (1 point) Library/Rochester/setDiffEQ1/e7_1_5.pg
Find the two values of k for which

$$y(x) = e^{kx}$$

is a solution of the differential equation

$$y'' - 4y' + 0y = 0.$$

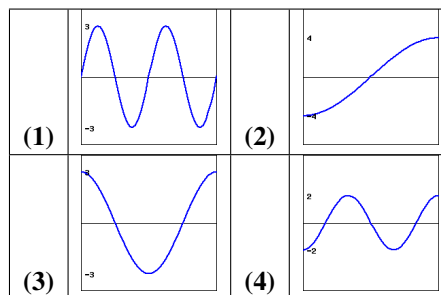
smaller value = _____

larger value = _____

6. (1 point) Library/Michigan/Chap11Sec10/Q13.pg

Each graph below represents a solution to one of the following differential equations. Match the graph to the differential equation.

- (a) $x'' + x = 0$ matches graph [?/1/2/3/4]
(b) $x'' + 4x = 0$ matches graph [?/1/2/3/4]
(c) $x'' + 16x = 0$ matches graph [?/1/2/3/4]



(The t -scales on the four graphs are the same.)

(d) Find an equation for each of the graphs:

For graph (1), $x(t) = \underline{\hspace{2cm}}$

For graph (2), $x(t) = \underline{\hspace{2cm}}$

For graph (3), $x(t) = \underline{\hspace{2cm}}$

For graph (4), $x(t) = \underline{\hspace{2cm}}$

7. (1 point) Library/Rochester/setDiffEQ9Linear2ndOrderHomog/ur_de_9_12.pg

Find y as a function of t if

$$324y'' + 252y' + 49y = 0,$$

$$y(0) = 6, \quad y'(0) = 3.$$

$y = \underline{\hspace{2cm}}$

8. (1 point) Library/Utah/Calculus_II/set13_Differential_Equations/set13_pr10.pg

Solve the following differential equation:

$$y'' + 10y' + 25y = 0$$

Answer: $y(x) = C_1 \underline{\hspace{2cm}} + C_2 \underline{\hspace{2cm}}$.

NOTE: The order of your answers is important in this problem. For example, webwork may expect the answer "A+B" but the answer you give is "B+A". Both answers are correct but webwork will only accept the former.

9. (1 point) Library/Rochester/setDiffEQ9Linear2ndOrderHomog/ur_de_9_13.pg

Find y as a function of t if
 $25y'' - 70y' + 45y = 0$, and
 $y(4) = 5$, $y'(4) = 9$.
 $y =$ _____

10. (1 point) Library/Utah/Calculus_II/set13_Differential_Equations/set13_pr12.pg

Solve the following differential equation:

$$y'' + y' + y = 0$$

Answer: $y(x) = C_1$ _____ $+ C_2$ _____.

NOTE: The order of your answers is important in this problem. For example, webwork may expect the answer "A+B" but the answer you give is "B+A". Both answers are correct but webwork will only accept the former.

11. (1 point) Library/UMN/calculusStewartCCC/s_17_1_30.pg
Solve the boundary-value problem $y'' - 6y' + 9y = 0$, $y(0) = 1$, $y(1) = 0$.

Answer: $y(x) =$ _____

Note: If there is no solution, type "None".

12. (1 point) Library/Dartmouth/setStewartCh18S1/problem_9.pg
Find the solution to the boundary value problem:

$$\frac{d^2y}{dt^2} - 6\frac{dy}{dt} + 18y = 0, \quad y(0) = 8, y(\pi/6) = 10$$

The solution is _____.