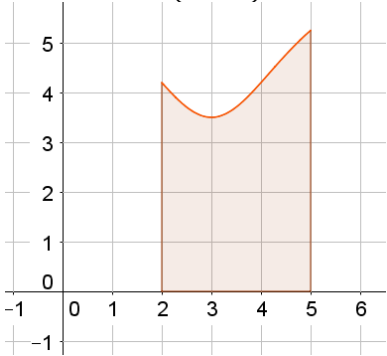
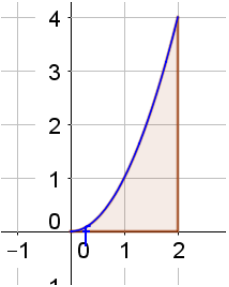
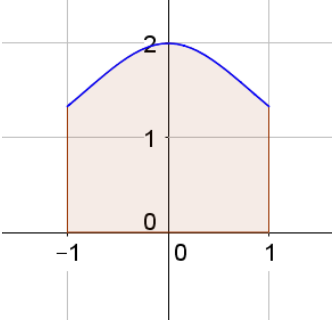


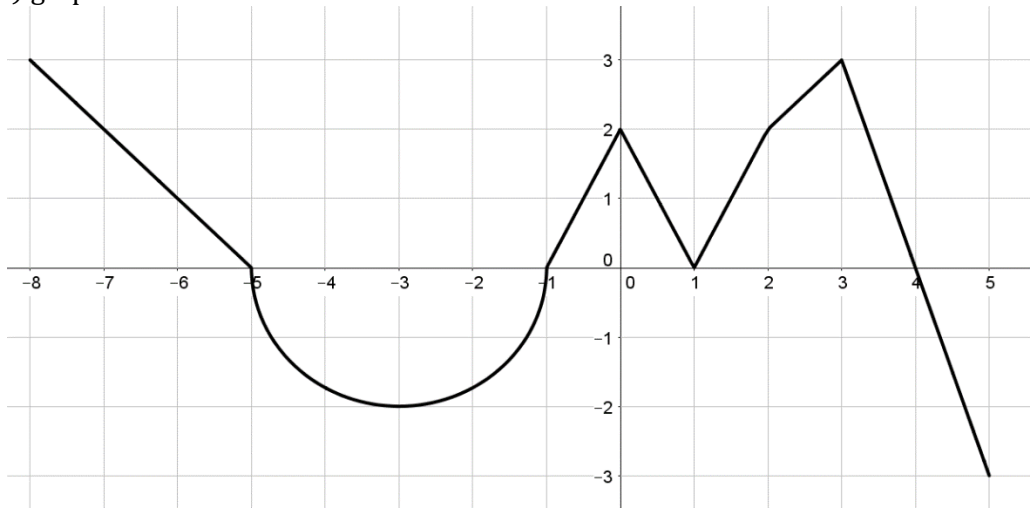
Name:  
 Teacher:  
 Period:  
 Due Date:

## Definitely Integrals

<p><b>1.)</b> Write an integral to represent the area under the curve of <math>y = 3x - x^2</math> on the interval <math>-2 \leq x \leq 5</math></p>	<p><b>2.)</b> Write an integral to represent the following area:</p> $y = \frac{7x^2 - 42x + 60}{(x - 3)^2}$ 
<p><b>3.)</b> Write an integral to represent the following area:</p> $y = x^2$ 	<p><b>4.)</b> Write an integral to represent the following area:</p> $y = \frac{4}{x^2 + 2}$ 
<p><b>5.)</b> Given <math>\int_0^3 f(x)dx = 4</math> and <math>\int_3^6 f(x)dx = -1</math>, evaluate:</p> <ol style="list-style-type: none"> <li><math>\int_0^6 f(x)dx</math></li> <li><math>\int_3^3 f(x)dx</math></li> <li><math>\int_6^3 f(x)dx</math></li> <li><math>\int_3^6 -5f(x)dx</math></li> <li><math>\int_0^3 (f(x) + 2)dx</math></li> </ol>	<p><b>6.)</b> Given <math>\int_0^5 f(x)dx = 10</math> and <math>\int_5^7 f(x)dx = 3</math>, evaluate:</p> <ol style="list-style-type: none"> <li><math>\int_0^7 f(x)dx</math></li> <li><math>\int_5^0 f(x)dx</math></li> <li><math>\int_5^5 f(x)dx</math></li> <li><math>\int_0^5 3f(x)dx</math></li> <li><math>\int_5^7 (f(x) - 4)dx</math></li> </ol>
<p><b>7.)</b> Given <math>\int_2^6 f(x)dx = 10</math> and <math>\int_2^6 g(x)dx = -2</math>, evaluate:</p> <ol style="list-style-type: none"> <li><math>\int_2^6 (f(x) + g(x))dx</math></li> <li><math>\int_2^6 (g(x) - f(x))dx</math></li> <li><math>\int_2^6 3f(x)dx</math></li> <li><math>\int_2^6 2g(x)dx</math></li> </ol>	<p><b>8.)</b> Given <math>\int_{-1}^1 f(x)dx = 0</math> and <math>\int_0^1 f(x)dx = 5</math>, evaluate:</p> <ol style="list-style-type: none"> <li><math>\int_{-1}^0 f(x)dx</math></li> <li><math>\int_0^1 f(x)dx - \int_{-1}^0 f(x)dx</math></li> <li><math>\int_{-1}^1 3f(x)dx</math></li> <li><math>\int_0^1 3f(x)dx</math></li> <li>Sketch a possible graph of the continuous function <math>f(x)</math>.</li> </ol>

Name:  
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Period:  
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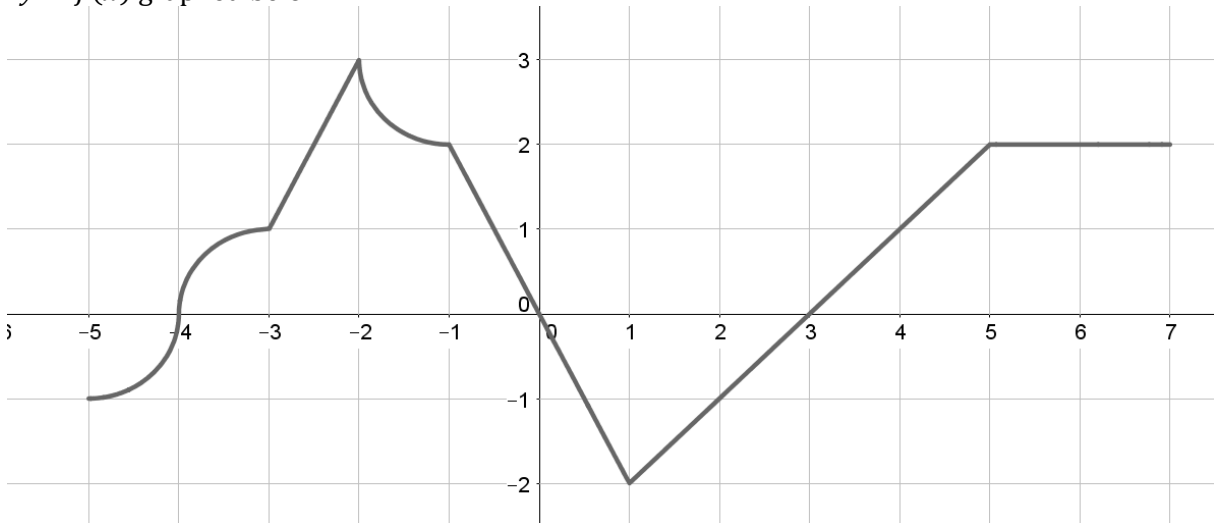
9.) For  $y = f(x)$  graphed below:



Evaluate:

- |    |   |    |                             |    |                        |
|----|---|----|-----------------------------|----|------------------------|
| A. | $\int_{-8}^{-5} f(x) dx$                    | B. | $\int_{-5}^{-1} f(x) dx$    | C. | $\int_1^4 f(x) dx$     |
| D. | $\int_{-\frac{1}{2}}^{\frac{1}{2}} f(x) dx$ | E. | $\int_4^5 f(x) dx$          | F. | $\int_{-8}^5 f(x) dx$  |
| G. | $\int_{-8}^5  f(x)  dx$                     | H. | $\int_{-8}^5 (f(x) + 1) dx$ | I. | $\int_{-8}^5 5f(x) dx$ |
| J. | $\int_{-8}^5 -f(x) dx$                      | K. | $\int_0^{-8} f(x) dx$       | L. | $\int_2^3 f(x) dx$     |

10.) For  $y = f(x)$  graphed below:



Evaluate:

- |    |                            |    |                             |    |                            |
|----|----------------------------|----|-----------------------------|----|----------------------------|
| M. | $\int_{-5}^{-3} f(x) dx$   | N. | $\int_{-3}^0 f(x) dx$       | O. | $\int_1^4 f(x) dx$         |
| P. | $\int_3^0 f(x) dx$         | Q. | $\int_4^5 f(x) dx$          | R. | $\int_{-5}^7 f(x) dx$      |
| S. | $\int_{-5}^{-4}  f(x)  dx$ | T. | $\int_{-5}^7 (f(x) - 4) dx$ | U. | $\int_{-5}^7 5f(x) dx + 5$ |

Name:  
 Teacher:  
 Period:  
 Due Date:

## Indefinitely Integrals

<p><b>11.)</b> Which of the following could be <math>f(x)</math> given <math>f'(x) = 3x^2</math>?</p> <p>a. <math>f(x) = x^3</math>        b. <math>f(x) = x^3 - 1</math>        c. <math>f(x) = x^3 + 5</math>        d. <math>f(x) = x^2</math>        e. <math>f(x) = 6x</math></p>	<p><b>12.)</b> Write a possible function for <math>f(x)</math> given:  <math>f'(x) = \sqrt[3]{x}</math></p>																										
<p><b>13.)</b> Write a possible function for <math>f(x)</math> given:  <math>f'(x) = e^x</math></p>	<p><b>14.)</b> Write a possible function for <math>f(x)</math> given:  <math>f'(x) = \frac{1}{x\sqrt{x}}</math></p>																										
<p><b>15.)</b> Write a possible function for <math>f(x)</math> given:  <math>f'(x) = \frac{1}{4x^2}</math></p>	<p><b>16.)</b> Write a possible function for <math>f(x)</math> given:  <math>f'(x) = x(x^3 + 1)</math></p>																										
<p><b>17.)</b>  <b>In Exercises 15–34, find the indefinite integral and check the result by differentiation.</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">15. <math>\int (x + 7) dx</math></td> <td style="width: 50%;">16. <math>\int (13 - x) dx</math></td> </tr> <tr> <td>17. <math>\int (2x - 3x^2) dx</math></td> <td>18. <math>\int (8x^3 - 9x^2 + 4) dx</math></td> </tr> <tr> <td>19. <math>\int (x^5 + 1) dx</math></td> <td>20. <math>\int (x^3 - 10x - 3) dx</math></td> </tr> <tr> <td>21. <math>\int (x^{3/2} + 2x + 1) dx</math></td> <td>22. <math>\int \left( \sqrt{x} + \frac{1}{2\sqrt{x}} \right) dx</math></td> </tr> <tr> <td>23. <math>\int \sqrt[3]{x^2} dx</math></td> <td>24. <math>\int (\sqrt[4]{x^3} + 1) dx</math></td> </tr> <tr> <td>25. <math>\int \frac{1}{x^5} dx</math></td> <td>26. <math>\int \frac{1}{x^6} dx</math></td> </tr> <tr> <td>27. <math>\int \frac{x + 6}{\sqrt{x}} dx</math></td> <td>28. <math>\int \frac{x^2 + 2x - 3}{x^4} dx</math></td> </tr> <tr> <td>29. <math>\int (x + 1)(3x - 2) dx</math></td> <td>30. <math>\int (2t^2 - 1)^2 dt</math></td> </tr> <tr> <td>31. <math>\int y^2 \sqrt{y} dy</math></td> <td>32. <math>\int (1 + 3t)t^2 dt</math></td> </tr> <tr> <td>33. <math>\int dx</math></td> <td>34. <math>\int 14 dt</math></td> </tr> </table>	15. $\int (x + 7) dx$	16. $\int (13 - x) dx$	17. $\int (2x - 3x^2) dx$	18. $\int (8x^3 - 9x^2 + 4) dx$	19. $\int (x^5 + 1) dx$	20. $\int (x^3 - 10x - 3) dx$	21. $\int (x^{3/2} + 2x + 1) dx$	22. $\int \left( \sqrt{x} + \frac{1}{2\sqrt{x}} \right) dx$	23. $\int \sqrt[3]{x^2} dx$	24. $\int (\sqrt[4]{x^3} + 1) dx$	25. $\int \frac{1}{x^5} dx$	26. $\int \frac{1}{x^6} dx$	27. $\int \frac{x + 6}{\sqrt{x}} dx$	28. $\int \frac{x^2 + 2x - 3}{x^4} dx$	29. $\int (x + 1)(3x - 2) dx$	30. $\int (2t^2 - 1)^2 dt$	31. $\int y^2 \sqrt{y} dy$	32. $\int (1 + 3t)t^2 dt$	33. $\int dx$	34. $\int 14 dt$	<p><b>18.)</b>  <b>In Exercises 35–44, find the indefinite integral and check the result by differentiation.</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">35. <math>\int (5 \cos x + 4 \sin x) dx</math></td> <td style="width: 50%;">36. <math>\int (t^2 - \cos t) dt</math></td> </tr> <tr> <td>37. <math>\int (1 - \csc t \cot t) dt</math></td> <td>38. <math>\int (\theta^2 + \sec^2 \theta) d\theta</math></td> </tr> <tr> <td>39. <math>\int (\sec^2 \theta - \sin \theta) d\theta</math></td> <td>40. <math>\int \sec y (\tan y - \sec y) dy</math></td> </tr> </table>	35. $\int (5 \cos x + 4 \sin x) dx$	36. $\int (t^2 - \cos t) dt$	37. $\int (1 - \csc t \cot t) dt$	38. $\int (\theta^2 + \sec^2 \theta) d\theta$	39. $\int (\sec^2 \theta - \sin \theta) d\theta$	40. $\int \sec y (\tan y - \sec y) dy$
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