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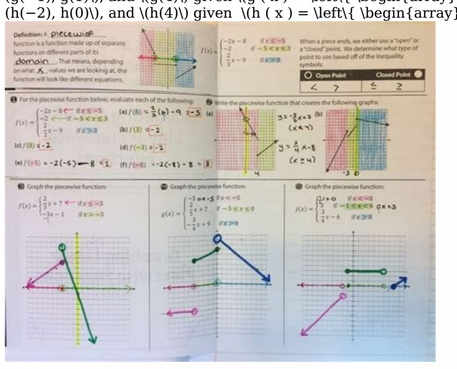
Evaluating piecewise functions worksheet answers

What does it mean to evaluate a piecewise function. Applying piecewise functions worksheet answers. Piecewise functions worksheet answers. Evaluating and graphing piecewise functions worksheet answers.

Exercise \(\PageIndex{B}\) Given function \(f\), evaluate \(f(−3)\), \(f(−2)\), \(f(−1)\), and \(f(0)\). 6. \(f(x)= \begin{cases} x+1 & \text{if $x < -2$} \\ -2x-3 & \text{if $x {\geq} -2$} \end{cases}\) 7. \(f(x)= \begin{cases} 1 & \text{if $x \leq -3$} \\ 0 & \text{if $x > -3$} \end{cases}\) 8. \(f(x)= \begin{cases} -2x^2+3 & \text{if $x \leq -1$} \\ 5x-7 & \text{if $x > -1$} \end{cases}\) Given function \(f\), evaluate \(f(−1)\), \(f(0)\), \(f(2)\), and \(f(4)\).
9. \(f(x)= \begin{cases} 7x+3 & \text{if $x < 0$} \\ 7x+6 & \text{if $x {\geq} 0$} \end{cases}\) 10. \(f(x)= \begin{cases} x^2-2 & \text{if $x < 2$} \\ 4+|x-5| & \text{if $x {\geq} 2$} \end{cases}\) 11. \(f(x)= \begin{cases} 5x & \text{if $x < 0$} \\ 3 & \text{if $0 {\geq} x {\leq} 2$} \\ x^2 & \text{if $x > 3$} \end{cases}\) Write the domain for each piecewise function in interval notation. 12. \(f(x)= \begin{cases} x+1 & \text{if $x < -2$} \\ -2x-3 & \text{if $x {\geq} -2$} \end{cases}\) 13. \(f(x)= \begin{cases} x^2-2 & \text{if $x < 1$} \\ -x^2+2 & \text{if $x > 1$} \end{cases}\) 14. \(f(x)= \begin{cases} x^2-3 & \text{if $x < 0$} \\ -3x^2 & \text{if $x {\geq} 2$} \end{cases}\) 15. Find \(f(-5), f(0)\), and \(f(3)\) given \(f (x) = \left\{ \begin{array} { l l } { x ^ { 2 } } & { \text { if } x \leq 0 } \\ { x + 2 } & { \text { if } x > 0 } \end{array} \right. \\[5pt] \) 16. Find \(f(−3), f(0)\), and \(f(2)\) given \(f (x) = \left\{ \begin{array} { l l } { x ^ { 3 } } & { \text { if } x < 0 } \\ { 2 x - 1 } & { \text { if } x \geq 0 } \end{array} \right. \\[5pt] \) 17. Find \(g(−1), g(1)\), and \(g(4)\) given \(g (x) = \left\{ \begin{array} { l l } { 5 x - 2 } & { \text { if } x < 1 } \\ { \sqrt { x } } & { \text { if } x \geq 1 } \end{array} \right. \\[5pt] \) 18. Find \(g(−3), g(−2)\), and \(g(−1)\) given \(g (x) = \left\{ \begin{array} { l l } { x ^ { 3 } \text { if } x \leq - 2 } \\ { | x | \text { if } x > - 2 } \end{array} \right.\) 19. Find \(h(−2), h(0)\), and \(h(4)\) given \(h (x) = \left\{ \begin{array} { l l } { - 5 } & { \text { if } x < 0 } \\ { 2 x - 3 } & { \text { if } 0 \leq x < 2 } \\ { x ^ { 2 } } & { \text { if } x \geq 2 } \end{array} \right.



\\[5pt] \) 20. Find \(h(−5), h(4)\), and \(h(25)\) given \(h (x) = \left\{ \begin{array} { l } { - 3 x \text { if } x \leq 0 } \\ { x ^ { 3 } \text { if } 0 < x \leq 4 } \\ { \sqrt { x } \text { if } x > 4 } \end{array} \right.\) 21. Find \(f(−2), f(0)\), and \(f(3)\) given \(f (x) = {[{[x-0.5}]}] \\[5pt] \) 22. Find \(f(−1.2), f(0.4)\), and \(f(2.6)\) given \(f (x) = {[{[2x}]}]+ 1 \\[5pt] \) Answers to Odd Exercises: 7. \(f(−3)=1\); \(f(−2)=0\); \(f(−1)=0\); \(f(0)=0\) 9. \(f(−1)=−4\); \(f(0)=6\); \(f(2)=20\); \(f(4)=34\) 11. \(f(−1)=−5\); \(f(0)=3\); \(f(2)=3\); \(f(4)=16\) 13. domain: \((−\infty,1)\cup(1,\infty)\) 15. \(f (−5) = 25, f(0) = 0\), and \(f(3) = 5\) 17. \(g(−1) = −7, g(1) = 1\), and \(g(4) = 2\) 19. \(h(−2) = −5, h(0) = −3\), and \(h(4) = 16\) 21. \(f(−2) = −3, f(0) = −1\), and \(f(3) = 2\) Exercise \(\PageIndex{C}\) \(\bigstar \) Graph two-part piecewise functions. \(h (x) = \left\{ \begin{array} { l l } { x ^ { 2 } + 2 } & { \text { if } x < 0 } \\ { x + 2 } & { \text { if } x \geq 0 } \end{array} \right. \\[2pt] \) \(h (x) = \left\{ \begin{array} { l l } { x ^ { 2 } - 3 \text { if } x < 0 } \\ { \sqrt { x } - 3 \text { if } x \geq 0 } \end{array} \right. \\[2pt] \) \(h (x) = \left\{ \begin{array} { l l } { x ^ { 3 } - 1 } & { \text { if } x < 0 } \\ { | x - 3 | - 4 } & { \text { if } x \geq 0 } \end{array} \right. \\[2pt] \) \(h (x) = \left\{ \begin{array} { c c } { x ^ { 3 } } & { \text { if } x < 0 } \\ { (x - 1) ^ { 2 } - 1 } & { \text { if } x \geq 0 } \end{array} \right. \\[2pt] \) \(h (x) = \left\{ \begin{array} { l l } { x ^ { 2 } - 1 } & { \text { if } x < 0 } \\ { 2 } & { \text { if } x \geq 0 } \end{array} \right. \\[2pt] \) \(h (x) = \left\{ \begin{array} { l l } { x + 2 } & { \text { if } x < 0 } \\ { (x - 2) ^ { 2 } } & { \text { if } x \geq 0 } \end{array} \right.\) \(g (x) = \left\{ \begin{array} { l l } { 2 } & { \text { if } x < 0 } \\ { x } & { \text { if } x \geq 0 } \end{array} \right. \\[2pt] \) \(g (x) = \left\{ \begin{array} { l l } { x ^ { 2 } } & { \text { if } x < 0 } \\ { 3 } & { \text { if } x \geq 0 } \end{array} \right. \\[2pt] \) \(h (x) = \left\{ \begin{array} { l l } { x } & { \text { if } x < 0 } \\ { \sqrt { x } } & { \text { if } x \geq 0 } \end{array} \right. \\[2pt] \) \(h (x) = \left\{ \begin{array} { l } { | x | \text { if } x < 0 } \\ { x ^ { 3 } \text { if } x \geq 0 } \end{array} \right.
\\[2pt] \) \(f (x) = \left\{ \begin{array} { l } { | x | \text { if } x < 2 } \\ { 4 \text { if } x \geq 2 } \end{array} \right.\) \(f (x) = \left\{ \begin{array} { l l } { x } & { \text { if } x < 1 } \\ { \sqrt { x } } & { \text { if } x \geq 1 } \end{array} \right. \\[2pt] \) \(g (x) = \left\{ \begin{array} { l l } { x ^ { 2 } \text { if } x \leq - 1 } \\ { x \quad \text { if } x > - 1 } \end{array} \right. \\[2pt] \) \(g (x) = \left\{ \begin{array} { l } { - 3 \text { if } x \leq - 1 } \\ { x ^ { 3 } \text { if } x > - 1 } \end{array} \right. \\[2pt] \) \(h (x) = \left\{ \begin{array} { l } { 0 \text { if } x \leq 0 } \\ { \frac { 1 } { x } \text { if } x > 0 } \end{array} \right. \\[2pt] \) \(h (x) = \left\{ \begin{array} { l } { \frac { 1 } { x } \text { if } x < 0 } \\ { x ^ { 2 } \text { if } x \geq 0 } \end{array} \right.\) Answers to Odd Exercises: 23. 25. 27. Figure 2.4.27 29. Figure 2.4.29 31. Figure 2.4.31 . 33. Figure 2.4.33 . 35. Figure 2.4.35 . 37.
Figure 2.4.37 . \(\bigstar \) Graph 3 or more part piecewise functions. \(h (x) = \left\{ \begin{array} { l l } { (x + 10) ^ { 2 } - 4 } & { \text { if } x < - 8 } \\ { x + 4 } & { \text { if } - 8 \leq x < - 4 } \\ { \sqrt { x + 4 } } & { \text { if } x \geq - 4 } \end{array} \right. \\[5pt] \) \(f (x) = \left\{ \begin{array} { l l } { x + 10 } & { \text { if } x \leq - 10 } \\ { | x - 5 | - 15 } & { \text { if } - 10 < x \leq 20 } \\ { 10 } & { \text { if } x > 20 } \end{array} \right. \\[5pt] \) \(f (x) = \left\{ \begin{array} { l l } { x ^ { 2 } } & { \text { if } x < 0 } \\ { x } & { \text { if } 0 \leq x < 2 } \\ { - 2 } & { \text { if } x \geq 2 } \end{array} \right. \\[5pt] \) \(f (x) = \left\{ \begin{array} { l l } { x } & { \text { if } x < - 1 } \\ { x ^ { 3 } } & { \text { if } - 1 \leq x < 1 } \\ { 3 } & { \text { if } x \geq 1 } \end{array} \right. \\[5pt] \) \(g (x) = \left\{ \begin{array} { l l } { 5 } & { \text { if } x < - 2 } \\ { x ^ { 2 } } & { \text { if } - 2 \leq x < 2 } \\ { x } & { \text { if } x \geq 2 } \end{array} \right.\) \(g (x) = \left\{ \begin{array} { l l } { x } & { \text { if } x < - 3 } \\ { | x | } & { \text { if } - 3 \leq x < 1 } \\ { \sqrt { x } } & { \text { if } x \geq 1 } \end{array} \right.

Name: _____ Date: _____
Algebra II Honors Graphing Polynomial Functions Worksheet

I. For each of the following, a) give the x-intercepts as ordered pairs, b) the y-intercepts as an ordered pair and c) graph. Pay close attention to the order of the intercepts and also label on the graph how it should look at that intercept (s, t, or cc).

1. $P(x) = x^2 + 5x - 6$
2. $P(x) = x^4 - 4x^2$
3. $P(x) = x^3 + 2x^2 - 3x$
4. $P(x) = x^4 - 17x^2 + 16$
5. $P(x) = (x+1)^2$
6. $P(x) = (x-2)^3$
7. $P(x) = (x-1)(x+3)^4$
8. $P(x) = (x+1)(x-2)^2(x-1)^3$
9. $P(x) = (x-3)^2(x-2)^2$

II. Describe the end behaviors of the graph and then graph it labeling the zeroes. Also label each time it crosses the x-axis with s, t, or cc.

1. $y = -3(x+1)(x-3)^2(x+2)$
2. $y = (x-2)^3(x-1)(x+3)^2$
3. $y = -x^2(x+1)^2$
4. $y = 4(2x-3)(x-1)^3$
5. $y = 2x(x-4)^2(x+2)^3(x+3)^2$
6. $y = -4(x-2)(x+2)$
7. $y = (x-2)(2x-1)(x+1)^3$
8. $y = -(x-6)^2(x-4)(x-1)^3$
9. $y = x^3 - 6x^2 + 9x$
10. $y = x^4 - 13x^2 + 36$

\\[5pt] \) \(h (x) = \left\{ \begin{array} { l } { \frac { 1 } { x } \text { if } x < 0 } \\ { x ^ { 2 } \text { if } 0 \leq x < 2 } \\ { 4 \text { if } x \geq 2 } \end{array} \right. \\[5pt] \) \(h (x) = \left\{ \begin{array} { l } { 0 \text { if } x < 0 } \\ { x ^ { 3 } \text { if } 0 < x \leq 2 } \\ { 8 \text { if } x > 2 } \end{array} \right. \\[5pt] \) \(f (x) ={[{[x+0.5}]}] \\[5pt] \) \(f(x) = {[{[x]}]} +1\) \(f(x) = {[{[0.5x]}]} \\[5pt] \) \(f(x) = 2 {[{[x]}]} \) Answers to Odd Exercises: 39. Figure 2.4.39 41. Figure 2.4.41 x 43. Figure 2.4.43 45.
Figure 2.4.45 x 47. Figure 2.4.47 49. Figure 2.4.49 x Exercise \(\PageIndex{D}\) \(\bigstar \) For each of the following, (a) graph the piecewise function, and (b) state its domain in interval notation.
51. \(f(x)= \begin{cases} 2x-1 & \text{if $x < 1$} \\ 1+x & \text{if $x {\geq} 1$} \end{cases}\) 52. \(f(x)= \begin{cases} x+1 & \text{if $x < -2$} \\ -2x-3 & \text{if $x {\geq} -2$} \end{cases}\) 53. \(f(x)= \begin{cases} 3 & \text{if $x < 0$} \\ \sqrt{x} & \text{if $x {\geq} 0$} \end{cases}\) 54. \(f(x)= \begin{cases} x+1 & \text{if $x < 0$} \\ x-1 & \text{if $x > 0$} \end{cases}\) 55. \(f(x)= \begin{cases} x^2 & \text{if $x < 0$} \\ x+2 & \text{if $x {\geq} 0$} \end{cases}\) 56. \(f(x)= \begin{cases} x^2 & \text{if $x < 0$} \\ 1-x & \text{if $x > 0$} \end{cases}\) 57. \(f(x)= \begin{cases} |x| & \text{if $x < 2$} \\ 1 & \text{if $x {\geq} 2$} \end{cases}\) 58. \(f(x)= \begin{cases} x+1 & \text{if $x < 1$} \\ x^3 & \text{if $x {\geq} 1$} \end{cases}\) Answers to Odd Exercises: 51. domain: \((−\infty,\infty)\) 53. domain: \((−\infty,\infty)\) 55. domain: \((−\infty,\infty)\) 57. domain: \((−\infty,\infty)\) Exercise \(\PageIndex{E}\) \(\bigstar \) For each of the piecewise-defined functions, (a) sketch the graph, and (b) evaluate at the given values of the independent variable. 59. \(f(x)=\begin{cases}x^2-3, & x≤0\\ 4x-3, & x>0\end{cases} \quad \text{Find } f(−4), \; f(0), \; f(2)\) 60. \(f(x)=\begin{cases}4x+3, & x≤0\\ -x+1, & x>0 \end{cases} \quad \text{Find } f(−3), \; f(0), \; f(2)\) 61. \(g(x)=\begin{cases}\frac{3}{x−2}, &x≠2\\4, &x=2\end{cases} \quad \text{Find } g(0), \; g(−4), \; g(2)\) 62. \(h(x)=\begin{cases}x+1, &x≤5\\4, &x>5\end{cases} \quad \text{Find } h(0), \; h(π), \; h(5)\) Answers to Odd Exercises: 59. \(f(−4)=13,\; f(0)=-3,\; f(2)=5\) \(\qquad\) 61. a. \(g(0)=\frac{−3}{2},\; g(−4)=\frac{−1}{2},\; g(2)=4 \) \(\qquad\) Exercise \(\PageIndex{F}\) \(\bigstar \) (a) Evaluate piecewise function values from a graph. (b) Construct a piecewise function corresponding to the graph. 63.
Find \(f(-4), f(-2)\), and \(f(0)\). Figure 2.4e.63 64. Find \(f(−3), f(0)\), and \(f(1)\).
Figure 2.4e.64 65. Find \(f(0), f(2)\), and \(f(4)\). Figure 2.4e.65 66. Find \(f(−5), f(−2)\), and \(f(2)\). Figure 2.4e.66 67. Find \(f(−3), f(−2)\), and \(f(2)\). Figure 2.4e.67 68. Find \(f(−3), f(0)\), and \(f(4)\). Figure 2.4e.68 69. Find \(f(−2), f(0)\), and \(f(2)\). Figure 2.4e.69 70. Find \(f(−3), f(1)\), and \(f(2)\). Figure 2.4e.70 Answers to Odd Exercises: 63. \(f(−4) = 1, f(−2) = 1\), and \(f(0) = 0 \qquad f(x)=\begin{cases}1, & x≤-2\\ x, & x>-2\end{cases})\) 65. \(f(0) = 0, f(2) = 8\), and \(f(4) = 0 \qquad \qquad f(x)=\begin{cases}-2, & x≤0\\ \frac{1}{x}, & x>0\end{cases} \) 67. \(f(−3) = 5, f(−2) = 4\), and \(f(2) = 2 \qquad f(x)=\begin{cases}5, & x< -2\\x^2, & -2 \le x < 2\\ x, & x \ge 2\end{cases} \) 69. \(f(−2) = −1, f(0) = 0\), and \(f(2) = 1 \qquad f(x)=\begin{cases}-1, & x<0\\ 0, & x=0\\ 1, & x>0\end{cases} \) Built of pieces of different functions put together, the piecewise functions describe situations in which the function rule changes based on the input value. The formula to find the output changes as the input value reaches a mark. The functions here are represented in interval notation. For instance, take this situation: Cathy babysits over the weekends. She charges a fee of $10 up to one hour and an extra $5 for every additional hour. This can be represented as a piecewise function in interval notation as f(x) = {$10x ≤ 1; $5(x + 1)x > 1}. This is one scenario where piecewise functions are used in real-life. High school students solve the exercises found in these evaluating piecewise function worksheets to bolster skills. Grab printouts of these worksheets, available in two levels of difficulty, begin substituting the values and evaluate. Wait no longer, print our free worksheet and initiate the practice process.