Function Jeopardy!

Extra Credit: Before you begin, enter your name in the text field below. After you have finished with Function Jeopardy!, print the next page (the game board page) and turn it in for extra credit.

Name: _____

Method of Scoring. If you answer a question correctly, the dollar value of that question is added to your total. If you miss a question, the dollar value is *subtracted* from your total. So think carefully before you answer!

Instructions. Solve the problems in any order you wish. If your total at the end is more than $2040, you will be declared **FuncTerrific**, a master of functions of college algebra!

To Begin: Go to the next page.

General Functions	Quadratic Functions	Polynomial Functions	Rational Functions
100	100	100	100
200	200	200	200
300	300	300	300

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General Functions

For $100: Given credit for first using the functional notation $f(x)$.

Who is. . . [ ]

General Functions

For $200: Given $f(x) = \dfrac{x}{x+2}$, the expression that represents $f(1/x)$. What is ...

$f(2x) =$ $\boxed{}$

General Functions

For $300: The axis of symmetry of the graph of the function $f(x) = 2 - (x+1)^2$. What is ...

(a) the x-axis

(b) the y-axis

(c) the line $x = -1$

(d) the line $x = 1$

(e) the line $y = 2$

(f) the line $y = -2$

Quadratic Functions

For $100: The number of zeros of the quadratic function

$$f(x) = x^2 - 2x + 2$$

What is ...

(a) 0

(b) 1

(c) 2

(d) 3

Quadratic Functions

For $200: The vertex V of the parabola $f(x) = 3 - 4x - 4x^2$. What is ...

(a) $V(1/4, 7/4)$

(b) $V(-1/4, 15/4)$

(c) $V(1/2, 0)$

(d) $V(-1/2, 4)$

(e) $V(3/4, -9/4)$

(f) $V(-1/2, 15/4)$

(g) None of these

Quadratic Functions

For $300: The price p and the quantity x sold of a certain product obey the demand equation

$$p = -\frac{1}{6}x + 100$$

Find the quantity x that maximizes revenue.

(a) 100 (b) 200 (c) 300 (d) 400

(e) 500 (f) 600 (g) 700 (h) 800

(i) 900 (j) 1000 (k) 1100 (l) 1200

Polynomial Functions

For $100: The **end behavior** of the polynomial function

$$f(x) = (2x-1)^2(x+3)^2(3x^3+1)^2$$

is like that of what function? What is ...

(a) $y = x$ (b) $y = x^2$ (c) $y = x^3$ (d) $y = x^4$

(e) $y = x^5$ (f) $y = x^6$ (g) $y = x^7$ (h) $y = x^8$

(i) $y = x^9$ (j) $y = x^{10}$ (k) $y = x^{11}$ (l) $y = x^{12}$

Polynomial Functions

For $200: The multiplicity of the zero $x = 1/2$ of the polynomial function $f(x) = x^2(x-2)(2x-1)^3$. What is ...

(a) 1

(b) 2

(c) 3

(d) Don't fool with me, 1/2 is not a zero of this polynomial!

(e) None of these

Polynomial Functions

For $300: The number of times the function

$$y = -(x^2 + 0.5)(x - 1)^2(x + 1)(x - 2)$$

touches but *does not cross* the x-axis. What is ...

(a) 0 times

(b) 1 time

(c) 2 times

(d) 3 times

(e) 4 times

Rational Functions

For $100: For a rational function, when the degree of the numerator is greater than the degree of the denominator, then the x-axis is a horizontal asymptote. True or False?

(a) True

(b) False

Rational Functions

For $200: The asymptotes for the rational function

$$R(x) = \frac{3x^2 - 1}{(3x - 1)(2x + 2)}$$

What are ...

(a) $y = 1$, $x = -2$, $x = 3$

(b) $y = 1/6$, $x = -2$, $x = 1/3$

(c) $y = 1/2$, $x = -1$, $x = 1/3$

(d) $y = 1/2$, $x = -2$, $x = 3$

(e) $y = 1$, $x = 1$, $x = 1/3$

(f) $y = 1/6$, $x = -1$, $x = 1/3$

(g) None of these

Rational Functions

For $300: The oblique asymptote of the rational function

$$R(x) = \frac{4x^4 - 6x^3 + 5x^2 + x + 4}{2x^3 + 3x}$$

What is ...

(a) $y = 4$

(b) $y = 2x + 4$

(c) $y = 2x - 3$

(d) $y = 4x - 3$

(e) $y = 4x + 4$

(f) $y = 2x + 3$

(g) $y = 2x - 4$

(h) None of these