ANSWER PRESENTATION TOOL

Algebra 2 - Student Edit 5 5 - Practice 1-17 ALL EVEN Show Solu

ODD

1. $(f+g)(x) = f(x) + g(x) = -5\sqrt[4]{x} + 19\sqrt[4]{x} = 14\sqrt[4]{x}$

The functions f and g each have the same domain: $x \geq 0$. So, the domain of $f+g$ is $x \geq 0$. When $x = 16$, the value of the sum is

$(f+g)(16) = 14\sqrt[4]{16} = 14(2) = 28.$

$(f-g)(x) = f(x) - g(x)$

$= -5\sqrt[4]{x} - 19\sqrt[4]{x} = -24\sqrt[4]{x}$

The functions f and g each have the same domain: $x \geq 0$. So, the domain of $f-g$ is $x \geq 0$. When $x = 16$, the value of the difference is

$(f-g)(16) = -24\sqrt[4]{16} = -24(2) = -48.$

3. $(f+g)(x) = f(x) + g(x) = (6x - 4x^2 - 7x^3) + (9x^2 - 5x)$

$= -7x^5 + 5x^2 + x$

The functions f and g each have the same domain: all real numbers. So, the domain of $f + g$ is all real numbers. When $x = -1$, the value of the sum is

$(f+g)(-1) = -7(-1)^3 + 5(-1)^2 + (-1) = 11.$

$(f-g)(x) = f(x) - g(x) = (6x - 4x^2 - 7x^3) - (9x^2 - 5x)$

$= -7x^3 - 13x^2 + 11x$

The functions f and g each have the same domain: all real numbers. So, the domain of $f - g$ is all real numbers. When $x = -1$, the value of the difference is

$(f-g)(-1) = -7(-1)^3 - 13(-1)^2 + 11(-1) = -17.$

5. $(fg)(x) = (2x^3)(\sqrt[3]{x}) = 2x^{10/3}$

The functions f and g each have the same domain: all real numbers. So, the domain of fg is all real numbers. When $x = -27$, the value of the product is

$(fg)(-27) = 2(-27)^{10/3} = 2(59{,}049) = 118{,}098.$

$\left(\frac{f}{g}\right)(x) = \frac{2x^3}{\sqrt[3]{x}} = 2x^{8/3}$

The functions f and g each have the same domain: all real numbers. So, the domain of $\frac{f}{g}$ is $x \neq 0$. When $x = -27$, the value of the quotient is

$\left(\frac{f}{g}\right)(-27) = 2(-27)^{8/3} = 2(6561) = 13{,}122.$

7. $(fg)(x) = (4x)(9x^{1/2}) = 36x^{3/2}$

The domain of f is all real numbers and the domain of g is $x \geq 0$. So, the domain of fg is $x \geq 0$. When $x = 9$, the value of the product is $(fg)(9) = 36(9)^{3/2} = 36(27) = 972$.

$$\left(\frac{f}{g}\right)(x) = \frac{4x}{9x^{1/2}} = \frac{4}{9}x^{1/2}$$

The domain of f is all real numbers and the domain of g is $x \geq 0$. So, the domain of $\frac{f}{g}$ is $x > 0$. When $x = 9$, the value of the quotient is $\left(\frac{f}{g}\right)(9) = \frac{4}{9}(9)^{1/2} = \frac{4}{9}(3) = \frac{4}{3}$.

9. $(fg)(x) = f(x)g(x) = (7x^{3/2})(-14x^{1/3}) = -98x^{11/6}$

The domain of f is $x \geq 0$ and the domain of g is all real numbers. So, the domain of fg is $x \geq 0$. When $x = 64$, the value of the product is

$(fg)(64) = -98(64)^{11/6} = -98(2048) = -200{,}704$.

$$\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)} = \frac{7x^{3/2}}{-14x^{1/3}} = -\frac{1}{2}x^{7/6}$$

The domain of f is $x \geq 0$ and the domain of g is all real numbers. So, the domain of $\frac{f}{g}$ is $x > 0$. When $x = 64$, the value of the quotient is

$$\left(\frac{f}{g}\right)(64) = -\frac{1}{2}(64)^{7/6} = -\frac{1}{2}(128) = -64.$$

11. Enter f and g. From the screen, you can see that $f(5) + g(5) \approx 2541.04$, so $(f + g)(5) \approx 2541.04$. Similarly,

$(f - g)(5) \approx 2458.96,$

$(fg)(5) \approx 102{,}598.56,$

$\left(\frac{f}{g}\right)(5) \approx 60.92.$

13. Enter f and g. From the screen, you can see that $f(5) + g(5) \approx 7.76$, so $(f + g)(5) \approx 7.76$. Similarly,

$(f - g)(5) \approx -14.60,\quad (fg)(5) \approx -38.24,\quad \left(\frac{f}{g}\right)(5) \approx -0.31.$

15. The domain is incorrect; The domain of $\left(\frac{f}{g}\right)(x)$ is all real numbers except $x = 2$ and $x = -2$.

17. a. $(F + M)(t)$

$= F(t) + M(t)$

$= (0.0134t^3 - 0.160t^2 + 0.98t + 72.9)$

$\quad + (0.0093t^3 - 0.078t^2 + 0.58t + 82.3)$

$= 0.0227t^3 - 0.238t^2 + 1.56t + 155.2$

b. $(F + M)(t)$ represents the combined numbers (in millions) of female and male employees in the United States over the age of 16.