Pre-Calculus 12 "Deja Revu" Answer Key

Learning Guide 1/2

1) a) $f^{-1}(x) = \dfrac{4x}{2+x}$, yes

   b) $f^{-1}(x) = \pm\sqrt{\dfrac{x+5}{3}} + 1$, no

   c) $f^{-1}(x) = \dfrac{(x-2)^3 + 1}{5}$, yes

2) vert exp by factor 3,

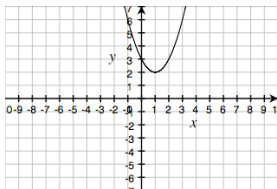   horiz comp $\dfrac{1}{2}$,

   reflect in x-axis,

   reflect in y-axis,
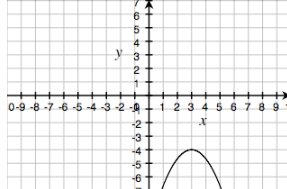
   vert trans down 7,

   horiz trans right 4

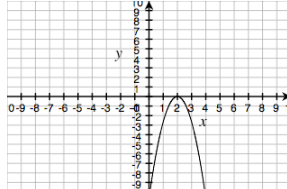3) $y = \dfrac{-1}{2} f\big(4(x+4)\big) - 2$

4) a)   b)

   c)   d)

Learning Guide 3

1. 17

2. $k = -4$

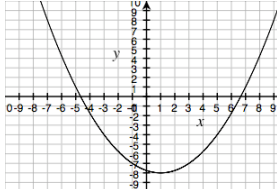3. $(x+2)(x-2)(2x-3)$

4. $y = -\frac{1}{2}(x-1)(x+3)^2$

Learning Guide 4/5

1. a) $\dfrac{13}{4}$

   b) 18

   c) $\dfrac{-2}{17}$

   d) $\dfrac{-\log 5 - 3\log 8}{\log 5 - 2\log 8}$

2) 2.78

3) 3.19 minutes

4) a) $\log \dfrac{A^3\sqrt[3]{D}}{\sqrt{BC^4}}$

   b) $\log \dfrac{1}{A^2 B^5}$

   c) $\log_2 \dfrac{8\sqrt{x}}{y^3}$

5) a) 4, reject -2

   b) no sol, reject 1, 2

   c) 1, reject $\dfrac{-5}{3}$

   d) 6, reject -2

Learning Guide 6

1. a) $\dfrac{1}{6}, \dfrac{1}{18}, \dfrac{1}{54}$ b) $2, -\dfrac{4}{3}$

2. 39991

3. $-\dfrac{9}{4}$

4. a)   b)   c)

$\displaystyle\sum_{n=1}^{5} 5n - 6$ $\displaystyle\sum_{n=1}^{5} 6\left(\dfrac{1}{6}\right)^{n-1}$ $\displaystyle\sum_{n=1}^{4} \dfrac{n^2}{n+1}$

5. $81 + 243 + 729 + 2187$

Pre-Calculus 12 "Deja Revu" Answer Key

Learning Guide 7/8

1) $\dfrac{g(x)}{h(x)} = x - 3$

   D: $x \neq -3$

   R: $y \neq 6$

2) $(f \circ g)(x) = \dfrac{4}{\sqrt{x}}$

   D: $x > 0$

   R: $y > 0$

3) a) $(g \circ f)(x) = 4 + |x - 4|$

   D: $x \in R$

   R: $y \geq 4$

   b) $(f \circ g)(x) = |x|$

   D: $x \geq 0$

   R: $y \geq 0$

   c) $(g \circ g)(x) = x + 8$

   D: $x \in R$

   R: $y \in R$

4) VA: x = -2

   HA: y = 2

   y-intercept: $(0, -3)$

   x-intercept: $(3, 0)$

   Domain: $x \neq -2$

   Range: $y \neq 2$

Learning Guide 7/8

5) VA: x = -3

   HA: y = 1

   y-intercept: $(0, 0)$

   x-intercept: $(0, 0)$

   pt. discontinuity (-6, 2)

   Domain: $x \neq -3$, $x \neq -6$

   Range: $y \neq 1$, $y \neq 2$

6) a) $y = \dfrac{40(x+6)(x-1)}{3(x+5)(x-2)}$

   b) $y = \dfrac{-18(x+3)(x-1)}{(x+2)(x-5)(x-1)}$

7) a) $\dfrac{-6}{5}$

   b) 4, -3

Learning Guide 10/11

1) a) $\pm\sqrt{15}$

   b) $\dfrac{-4}{\sqrt{15}}$

   c) $\dfrac{-3}{2\sqrt{2}}$

   d) $2\sqrt{2}$
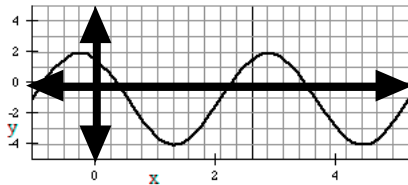
   e) $\dfrac{3}{2\sqrt{2}}$

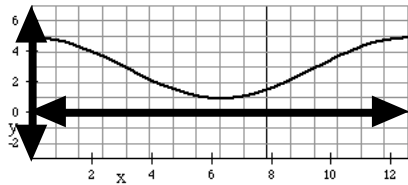# Pre-Calculus 12 "Deja Revu" Answer Key

Learning Guide 12/13

1) $y = -5\sin\dfrac{\pi}{4}(x-5) - 1$

$y = 5\cos\dfrac{\pi}{4}(x-3) - 1$

2)

3)

4) a) $h = -10\cos\dfrac{\pi}{30}t + 12$

b) at t = 150 seconds, h = 22 meters

c) 23.86 seconds & 36.14 seconds

5) a) $y = -9\cos\dfrac{1}{6}(x - 2\pi) - 11$

b) $y = 11\cos\dfrac{30\pi}{49}\left(x + \dfrac{5}{3}\right) + 7$

Learning Guide 14/15

1) Answers may vary. Check with your teacher.

Learning Guide 16

1) a) $\dfrac{-2\pi}{3}, \dfrac{2\pi}{3}$

b) $\dfrac{-\pi}{2}$

Learning Guide 16

2) a) $\dfrac{\pi}{3}, \dfrac{2\pi}{3} + (2n\pi, n \in I)$

b) $\dfrac{\pi}{6}, \dfrac{11\pi}{6} + (2n\pi, n \in I)$

c) $0, \pi, \dfrac{\pi}{3}, \dfrac{5\pi}{3} + (2n\pi, n \in I)$

d) $\dfrac{3\pi}{2}, \dfrac{\pi}{6}, \dfrac{5\pi}{6} + (2n\pi, n \in I)$

e) $\dfrac{\pi}{2} + (2n\pi, n \in I)$

f) $0, \dfrac{\pi}{2}, \dfrac{3\pi}{2} + (2n\pi, n \in I)$

3) a) $3.77, 5.66 + (2n\pi, n \in I)$

b) $\dfrac{3\pi}{4}, \dfrac{7\pi}{4}, 1.11, 4.25 + (2n\pi, n \in I)$

c) $\dfrac{2\pi}{3}, \dfrac{4\pi}{3}, 1.23, 5.05 + (2n\pi, n \in I)$

d) $0, \dfrac{\pi}{2}, \dfrac{3\pi}{2} + (2n\pi, n \in I)$

e) $\dfrac{\pi}{2}, \dfrac{3\pi}{2}, \dfrac{\pi}{6}, \dfrac{5\pi}{6} + (2n\pi, n \in I)$

f) $0, \pi, \dfrac{\pi}{4}, \dfrac{7\pi}{4} + (2n\pi, n \in I)$

g) $0, \dfrac{\pi}{2}, \dfrac{3\pi}{2} + (2n\pi, n \in I)$

h) $\dfrac{3\pi}{2}, \dfrac{\pi}{6}, \dfrac{5\pi}{6} + (2n\pi, n \in I)$

4) a) $\dfrac{\pi}{6}, \dfrac{5\pi}{6}, 3.48, 5.94$

b) $\dfrac{5\pi}{6}, 3.48$

c) -2.80, -0.34

d) $\dfrac{-7\pi}{6}$