

AP Calculus Summer Assignment Answer Sheet

1.

- a. $x = 3$
- b. $y - 3 = -2(x + 2)$
- c. $y = \frac{3}{5}(x - 5)$
- d. $y + 1 = \frac{3}{2}(x + 1)$
- e. $y - 2 = -2(x + 2)$
- f. $y - 2 = \frac{1}{2}(x + 2)$

2.

- a. Domain: $(-\infty, \infty)$ Range: 1
- b. Domain: $(-\infty, \infty)$ Range: $[0, \infty)$
- c. Domain: $[1, \infty)$ Range: $[0, \infty)$
- d. Domain: $(-\infty, -1) \cup (-1, \infty)$
- e. Domain: $(-\infty, \infty)$ Range: $[-1, 1]$

3.

- a.
 - i. $f(g(-3)) = 10$
 - ii. $g(f(3)) = 6$
 - iii. $f(g(x)) = x^2 + 1$
 - iv. $(g \circ f)(x) = (x - 1)^2 + 2$
- b.
 - i. $f(x) = \cos x$ $g(x) = 3x$
 - ii. $f(x) = x^2$ $g(x) = x + 3$
 - iii. $f(x) = e^x$ $g(x) = 2x - 1$
 - iv. $f(x) = \ln x$ $g(x) = x^2 - 3x + 5$

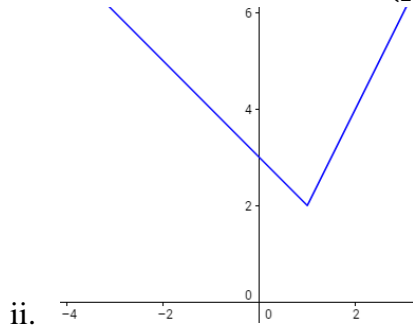
4.

- a. $f^{-1}(x) = \frac{x-3}{2}$
- b. $f^{-1}(x) = \frac{1}{\sqrt[3]{x}}$
- c. $f^{-1}(x) = \frac{2x+3}{x-1}$
- d. $f^{-1}(x) = \ln x$

5.

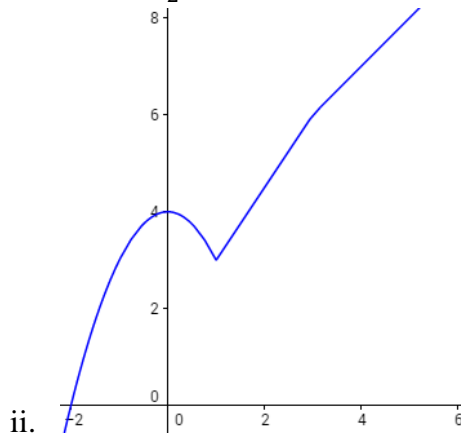
a.

i. $f(-2) = 5, f(1) = 2, f\left(\frac{5}{2}\right) = 5$



b.

i. $g(2) = \frac{9}{2}, g(0) = 4, g(3) = 6$



6.

- a. $\frac{\pi}{2}$
- b. $\frac{4\pi}{3}$
- c. $-\frac{\pi}{3}$
- d. $\frac{3\pi}{4}$
- e. $-\frac{3\pi}{2}$

7.

- a. -1
- b. $-\frac{\sqrt{3}}{3}$
- c. $-\frac{\sqrt{3}}{2}$
- d. 1
- e. $-\frac{\sqrt{2}}{2}$
- f. $\sqrt{3}$

8.

a.

i. $\ln\left(\frac{5^2}{2^3}\right)$

ii. $\ln(3 \cdot 5^2)$

iii. $\ln\left(\frac{a^2c}{b^5}\right)$

b.

i. x^4

ii. 2^{x+y-z}

iii. $e^{5/2}$

9.

a. $x = \ln 2$

b. $x = \frac{-2 + \ln 3}{0.05}$

c. $x = e^{3/2}$

d. $x = 2 + e^3$