APPC FRQ #1

2026

Ai) $h(2) = g(f(2)) \Rightarrow g(5) \approx -1.613946$

$h(2) \approx -1.614$

Aii) $f(x) = 3$ when $x = 1$

Bi) $g(x) = -1.5$

$x \approx 5.4827$

$x \approx 5.483$

Bii) $\lim_{x \to 1^+} g(x) = -\infty$

Ci.) yes, f is invertible.

Cii) Each output value on the graph of f is mapped from a unique input value on $-3 \leq x \leq 3$.

APPC FRQ #2 2026

Ai) $(1, 27.2)$ $(6, 14.8)$

$27.2 = ab^1$
$14.8 = ab^6$

Aii) $a = 30.7206458496 \approx 30.721$
$b = 0.88539805228 \approx 0.885$

Bi) $\dfrac{V(6) - V(1)}{6-1} = \dfrac{14.8 - 27.2}{6-1} = -2.48$

Bii) $y - 27.2 = -2.48(3-1)$
$y = 22.24$ thousand dollars

Biii) $V(t)$ is a concave up, exponential function. For $1 < t < 6$, the secant line lies above the model and $A(t) > V(t)$

C.) $V(t) \doteq 2$
$t = 22.443587613$
$t \approx 22.444$

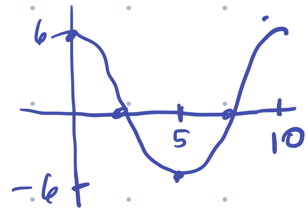
domain $[0, 22.444]$

In the 22nd year the value of the car will reach \$2000.

APPC FRQ #3 2026

A) period = 10 sec

F = (0,6)
G = (2.5,0)
J = (5,-6)
K = (7.5,0)
P = (10,6)



$\frac{2\pi}{10} = b$

$\pi/5 = b$

B) $h(t) = a \sin[b(t+c)] + d$

$a = 6$	$a = 6$
$b = \pi/5$	$b = \pi/5$
$c = 2.5$	$c = -2.5$
$d = 0$	$d = 0$

Ci) C. h is negative and increasing

Cii) The model is concave up on the interval (t_1, t_2) so the rate of change of h is increasing.

APPC FRQ #4

2026

Ai.) $e^{2x} = \frac{1}{e^6}$

$e^{2x} = e^{-6}$

$2x = -6$

$x = -3$

Aii) $\log_2(5x) = 3$

$5x = 2^3$

$x = \frac{8}{5}$

Bi) $j(x) = 7^{(3x+1)} \cdot 7^x$

$j(x) = 7^{4x+1}$

Bii) $K(x) = \sin(2x)\sec x$

$K(x) = (2\sin x \cancel{\cos x})\left(\frac{1}{\cancel{\cos x}}\right)$

$K(x) = 2\sin x$

C) $m(x) = \tan^2(3x)$

$\tan^2(3x) = 1$

$\tan 3x = \pm 1$

$3x = \pi/4$ $\quad$ $3x = \frac{3\pi}{4}$ $\quad$ $3x = \frac{5\pi}{4}$

$[0, \pi/2]$: $x = \frac{\pi}{12}$ $\quad$ $x = \frac{\pi}{4}$ $\quad$ $x = \frac{5\pi}{12}$

$\tan x = \pm 1$

$x = \pi/4, 3\pi/4, 5\pi/4$