Question 1

Evaluate $\sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$.

$\sin^{-1}\left(\frac{\sqrt{2}}{2}\right) =$ ____

Question 2

Evaluate $\tan^{-1}(1)$.

Question 3

Simplify $2\cos(\sin^{-1} x)$.

A. $\frac{\sqrt{1-x^2}}{x}$

B. $\frac{1}{\sqrt{1+x^2}}$

C. $2\sqrt{1-x^2}$

D. $\frac{2x}{\sqrt{1-x^2}}$

Question 4

Convert the expression $\frac{4}{\sqrt{x}}$ to exponential form.

Question 5

Convert the expression $\frac{7x^6}{4\sqrt{x}}$ to exponential form.

____ $x^{\frac{\_\_}{\_\_}}$

Question 6

Solve the equation ln (x + 3) = 2 for x. Give the exact answer.

x = ____

Question 7

Solve the equation $e^{x+8} = 2$. Give an exact answer.

x = ____

Question 8

Write $\log_3 27^x - \log_3 3^x$ as a single logarithm.

$\log_3$____

Question 9

Write ln 9 − 2 ln (1/3) as a single logarithm.

ln ____

Question 10

Use the rules of logarithms to expand. Express your answer in terms of ln *x*, ln *y*, and ln *z*.

$\ln\left(\frac{x^{11}y^{7}}{z^{2}}\right)$ = ____

Question 11

Rewrite the exponential 2^{x} as a exponential with base *e*.

2^{x} = ____

Question 12

Find the exponential function of the form $f(x) = ae^{bx}$ that passes through the points (0, 3) and (5, 25).

$f(x)$ = ____ $e^{\_\_\_\_\,x}$

Question 13

If $f(x) = x - 3$ and $g(x) = \sqrt{x - 7}$, determine the function $\frac{f}{g}$, stating the domain.

$\left(\frac{f}{g}\right)(x)$ = ____ . The domain is {x | x ____ }.

Question 14

For $f(x) = x^2 + 8$ and $g(x) = \sqrt{x - 10}$, find the composition $f \circ g$ and identify the domain.

A. $(f \circ g)(x) = x + 2$. The domain is $\{x \mid x \geq 10\}$.

B. $(f \circ g)(x) = x - 2$. The domain is $\{x \mid x \geq 8\}$.

C. $(f \circ g)(x) = 2x - 2$. The domain is $\{x \mid x \geq 10\}$.

D. $(f \circ g)(x) = x - 2$. The domain is $\{x \mid x \geq 10\}$.

Question 15

Compare and contrast the graphs of $y = x^2$ and $y = x^2 + 3$.

A. The graph of $y = x^2 + 3$ is the same as the graph of $y = x^2$ shifted 3 units to the right.

B. The graph of $y = x^2 + 3$ is the same as the graph of $y = x^2$ moved up 9 units.

C. The graph of $y = x^2 + 3$ is the same as the graph of $y = x^2$ moved up 3 units.

D. The graph of $y = x^2 + 3$ is the same as the graph of $y = x^2$ moved down 3 units.

Question 16

Compare and contrast the graphs of $y = x^2$ and $y = (x - 8)^2$.

A. The graph of $y = (x - 8)^2$ is the same as the graph of $y = x^2$ shifted 8 units to the left.

B. The graph of $y = (x - 8)^2$ is the same as the graph of $y = x^2$ shifted up by 8 units.

C. The graph of $y = (x - 8)^2$ is the same as the graph of $y = x^2$ shifted 8 units to the right.

D. The graph of $y = (x - 8)^2$ is the same as the graph of $y = x^2$ shifted 64 units to the right.

Question 17

Describe how to get the graph of $y = 9x^2 - 4$ from the graph of $y = x^2$.

A. Dividing the *y*−scale by 9 and then shifting the graph down by 4 units

B. Multiplying the *y*−scale by 9 and then shifting the graph down by 4 units

C. Multiplying the *y*−scale by 9 and then shifting the graph up by 4 units

D. Dividing the *y*−scale by 9 and then shifting the graph up by 4 units