Exponential & Logarithmic Functions
5A – Common Logarithms

Use a calculator to find the common logarithm of each number to the nearest ten thousandth.

#1) 726.5

#2) 0.6351

#3) 0.0026

#4) 0.852

#5) 16,256

#6) 3.2×10^4

Use a calculator to find the antilogarithm of each number to the nearest hundredth.

#7) 0.6259

#8) 2.7356

#9) -0.0251

#10) -1.2619

#11) 4.3251

#12) 2.6359

#13) If $x > 0$, find the value of x in

$$(3x)^{\log 3} - (5x)^{\log 5} = 0$$

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Word Problems.

#14) The intensity of an earthquake is described by a number on the Richter scale. The Richter scale number, *R*, of an earthquake is given by the formula $R = \log\left(\frac{a}{T}\right) + B$, where *a* is the amplitude of the vertical ground motion in microns, *T* is the period of the seismic wave in seconds, and *B* is a factor that accounts for the wakening of seismic waves.

a. Find the intensity of an earthquake to the nearest tenth if a recording station measured the magnitude as 200 microns and the period as 1.6 seconds, and *B* = 4.2.

b. How much more intense is an earthquake of magnitude 5 on the Richter scale than an earthquake that measures 4 on the Richter scale?

#15) The parallax of a star is the difference in direction of the star as seen from two widely separated points. Astronomers use the parallax of a star to determine its distance from Earth. The apparent magnitude of a star is its brightness as observed from Earth. The apparent magnitude of a star is its brightness as observed from Earth. Astronomers use parsecs to measure interstellar space. One parsec is about 3.26 light years of 19.2 trillion miles. The absolute magnitude is the magnitude a star would have if it were 10 parsecs from Earth. The greater the magnitude of a star the fainter the star appears. For starts more than 30 parsecs, or 576 trillion miles from Earth, the formula relating the parallax, p, the absolute magnitude, M, and apparent magnitude, m, is M = m + 5 + 5 log p.

a. The star M35 in the constellation Gemini has an apparent magnitude of 5.3 and a parallax of about 0.018. Find the absolute magnitude of this star.

b. Stars with apparent magnitudes greater than 5 can be seen only with a telescope. If a star has an apparent magnitude of 8.6 and an absolute magnitude of 5.3, find its parallax to four decimal places.

#1) 2.8612
#2) -0.1972
#3) -2.5850
#4) -0.0696
#5) 4.2110
#6) 4.5051
#7) 423
#8) 544.00
#9) 0.94
#10) 0.05
#11) 21,139.76
#12) 432.41
#13) $\frac{1}{15}$
#14) a. 6.3
b. 10 times
#15) a. 1.58
b. 0.0219