

Name:

Math 165 Final Exam

Solve each equation for x and give both the exact value and the answer rounded off to the nearest hundredth.

1) $5^{x-2} = 30$

2) $4 \log_2(x) + 3 = 131$

3) $\ln(2x + 3) - \ln(3x - 1) = 8$

4) $\log(x + 4) - \log(x - 5) = \log(52)$

5) Write as a single logarithm: $3 \log x + (1/3) \log y - 2 \log z$

6) Expand: $\ln\left(\frac{5x^2y^4}{3z}\right) =$

7) What is the domain of the function $f(x) = \log(3x - 12)$?

Find the partial fraction decomposition of each:

8) $\frac{3x-4}{x^2-4x-32} =$

9) $\frac{x^3+4x-2}{x^2+6x+8} =$

10) What is the equation of a circle with a diameter of 12 and a center @ (6, -5)?

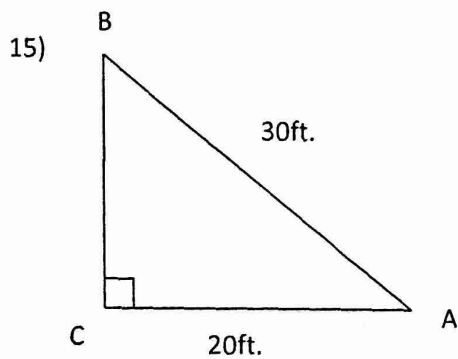
11) Write the equation of a parabola given it has a vertex at the point (2, -6) and passes through the point (-1, 4).

12) What is the 71st term in the sequence: -23, -18, -13, -8, -3,

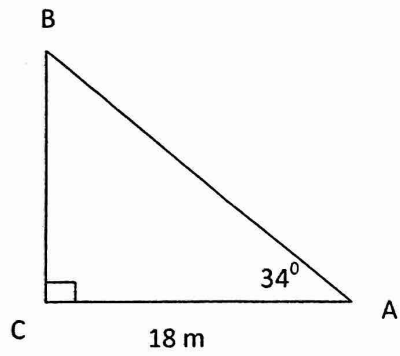
13) Given an arithmetic sequence has $a_3 = -6$ and $a_8 = 24$, find the 44th term.

14) Find the value of $\sum_{n=1}^{22} (2n - 3) =$

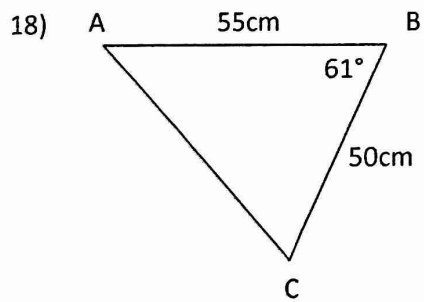
DIRECTIONS: Find all the missing sides and angles in each triangle for #'s 15 – 18:



16)



17) Given a triangle ABC, with $B = 22^\circ$, $b = 16.8$, $a = 22.42$.



Show each of the trig identities are valid:

$$19) \frac{\sin x}{\cos x} + \frac{\cos x}{\sin x} = \frac{1}{\sin x \cos x}$$

$$20) \frac{1 + \sec x}{\tan x + \sin x} = \csc x$$

21) Find two conterminal angles for the angle $\frac{-\pi}{4}$ radians.