

Pre-Calculus Review

NCFE

- 34ish questions (30 count, the rest are field test questions)
 - 2 hours (no extra time)
 - All multiple choice and calculator active
 - Testing in this room, 2316
 - Bring a calculator if you have one, Memory will be cleared
 - I will be holding a review session in my room on Monday 1/14/19, from 12:30-2:30.
 - Exam Wednesday, afternoon session
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1. Find the inverse of each of the following:

a) $y = \frac{3x+4}{x-1}$

b) $g(x) = \log_5(2x - 1) - 7$

2. Solve:

a) $\frac{1}{x^2-6x+8} - \frac{2}{x-4} = 1$

b) $e^{2x+5} = 8$

c) $\log_3(x^2 + 1) = 2$

d) $\log_5(x^2 + x + 5) = 2$

e) $\log(x + 5) - \log(x - 1) = \log 3$

3. Do you know the graphs of or six trig functions?

What is the domain and range of sine, cosine, and tangent?

What characteristics do they have?

4. Given the following equations, state the amplitude and period. Describe all transformations.

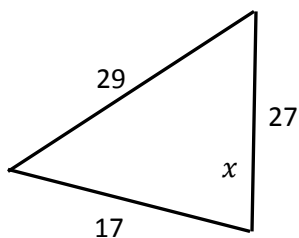
a) $y = \frac{1}{3} \cos\left(-\frac{x}{2}\right) - 5$

b) $y = \cos(2x - \pi) - 5$

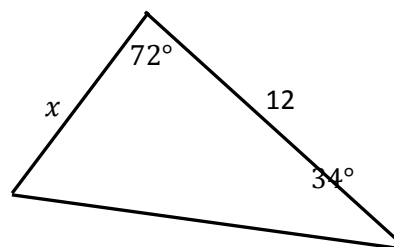
c) $y = 5 \sin\left(\frac{x}{3} + 6\right)$

5. Solve for x .

a)



b)



6. A straight trail with an inclination of 17° leads from a hotel at an elevation of 9000 feet to a mountain lake at an elevation of 11,200 feet. What is the length of the trail?
7. Jack and Jill measure the angle of elevation of a bird, Jack's angle measures 25° and Jill's angle measures 40° . If Jack and Jill are 100 feet apart and the bird is flying over the line joining them, how high is the bird?
8. Determine if the given information can form 1, 2, or no triangles;
- a) $A = 59^\circ, c = 22, a = 7$ b) $B = 57^\circ, a = 35, b = 34$ c) $A = 53^\circ, c = 14, a = 20$

9. What are the three Pythagorean Identities?

10. Simplify Each of the following.

a) $(\csc \theta - 1)(\csc \theta + 1)$

b) $\sin \theta(\cot \theta + \tan \theta)$

c) $1 - \frac{\sin^2 \theta}{1 + \cos \theta}$

11. What 4 equations should we think of when we discuss polar equations?

12. Change the following coordinates to rectangular form.

a) $(-2, 164^\circ)$

b) $\left(4, -\frac{\pi}{4}\right)$

13. Change the following coordinates to polar form in degree mode.

a) $(-2, 164^\circ)$

b) $\left(4, -\frac{\pi}{4}\right)$

14. Convert the polar equations to rectangular equations. Identify the conic sections.

a) $r = \frac{4}{2 + \cos \theta}$

b) $r = \sin \theta$

c) $r = \frac{3}{1 + 2 \sin \theta}$

d) $r = \frac{6}{2 \cos \theta - 3 \sin \theta}$

15. Convert the rectangular equations to polar equations.

a) $(x - 1)^2 + (y - 1)^2 = 2$

b) $(x - 2)^2 + y^2 = 4$

16. Find the rectangular equation of the parametric curve.

a) $x = t - 3, y = 2t^2 + 4$

b) $x = 2 + 3 \sin t, y = -1 + 16 \cos t$