Name:_____

Student ID:_____

Section:_____

Instructor: Dr. Dang

# Math 1316 (Trigonometry)
# Practice Test 1

Instructions:

- I strongly suggest you only use a scientific calculator such as the TI-30X IIS when you work on the multiple choice part of the practice exam because you will only be allowed a scientific calculator for the multiple choice part actual exam. Sophisticated calculators and computational tools such as graphing calculators or Wolfram Alpha will hinder the goal of this practice exam, which is a drill to prepare you for the actual exam.
- Please use no calculator at all when working on the written part because you are not allowed to use calculators on the written part of the actual exam.
- Simplify your answers as much as possible.
- For questions 16 to 20, show all your work in the space provided. justifying your answer.
- **Please write neatly.**

**For Instructor use only.**

| # | Possible | Earned |
|---|---|---|
| MC | 75 | |
| 16 | 5 | |
| 17 | 5 | |
| Sub | 85 | |
| | | |

| # | Possible | Earned |
|---|---|---|
| 18 | 5 | |
| 19 | 5 | |
| 20 | 5 | |
| Sub | 15 | |
| Total | 100 | |

**Multiple Choice - CALCULATORS ALLOWED. Circle the correct answer for each question. Circle one choice only.**

1. (Section 1.1) Convert the angle to decimal degrees and round to the nearest hundredth of a degree.

$$153°31'18''.$$

a) $125.43°$ b) $153.52°$ c) $167.52°$ d) $189.53°$

2. (Section 1.1) Find the measures of two supplementary angles with measures $(3z - 10)°$ and $(2z)°$.

a) $94°, 86°$ b) $50°, 40°$ c) $104°, 76°$ d) $108°, 72°$

3. (Section 1.1) Find the angle of smallest possible positive measure coterminal with $210°$.

a) $30°$ b) $120°$ c) $150°$ d) $160°$

4. (Section 1.2) One angle of a triangle has measure $40°20'$ and another angle has measure $20°35'$. Find the measure of the third angle.

a) $29°05'$ b) $119°05'$ c) $113°15'$ d) $98°55'$

5. (Section 1.2) Find the values of $m$ and $n$ in the pair of similar triangles.

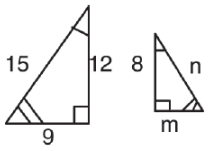


Figure 1: Figure for Question 5

a) $m = 3, n = 4$ b) $m = 6, n = 10$

c) $m = 5, n = 4$ d) $m = 5, n = 8$

6. (Section 1.2) A water tower casts a shadow of 36 ft at the same time that a 12-in. ruler casts a shadow of 3 in. How tall is the water tower?

a) 144 ft b) 96 ft c) 248 ft d) 384 ft

7. (Section 1.3) Find the values of $\sin\theta$, $\cos\theta$, and $\tan\theta$ for the angle $\theta$ in standard position having $(-4, -3)$ on its terminal side.

a) $\sin\theta = -\frac{3}{5}, \cos\theta = -\frac{4}{5}, \tan\theta = \frac{3}{4}$ b) $\sin\theta = \frac{4}{5}, \cos\theta = -\frac{3}{5}, \tan\theta = \frac{4}{3}$

c) $\sin\theta = -\frac{3}{5}, \cos\theta = \frac{4}{5}, \tan\theta = \frac{3}{4}$ d) $\sin\theta = \frac{4}{5}, \cos\theta = \frac{3}{5}, \tan\theta = -\frac{3}{4}$

8. (Section 1.3) Find the values of $\csc\theta$, $\sec\theta$, and $\cot\theta$ for the angle $\theta$ in standard position having $(4,-2)$ on its terminal side.

a) $\csc\theta = -\frac{2}{\sqrt{5}}$, $\sec\theta = \frac{2}{\sqrt{5}}$, $\cot\theta = -\frac{1}{2}$

b) $\csc\theta = -2\sqrt{5}$, $\sec\theta = \sqrt{5}$, $\cot\theta = \frac{1}{2}$

c) $\csc\theta = \sqrt{5}$, $\sec\theta = \frac{2}{\sqrt{5}}$, $\cot\theta = -2$

d) $\csc\theta = -\sqrt{5}$, $\sec\theta = \frac{\sqrt{5}}{2}$, $\cot\theta = -2$

9. (Section 1.3) Evaluate the following

$$\csc^2 90^\circ + (\sin 270^\circ)(\tan 180^\circ).$$

a) 0 b) 2 c) 1 d) $-1$

10. (Section 1.4) Find $\sin\alpha$ and $\cos\alpha$ given that

$$\tan\alpha = \frac{3}{5} \text{ and } \sec\alpha < 0.$$

a) $\sin\alpha = -\frac{3\sqrt{34}}{34}$, $\cos\alpha = -\frac{5\sqrt{34}}{34}$

b) $\sin\alpha = \frac{3\sqrt{34}}{34}$, $\cos\alpha = \frac{5\sqrt{34}}{34}$

c) $\sin\alpha = -\frac{3\sqrt{34}}{34}$, $\cos\alpha = \frac{5\sqrt{34}}{34}$

d) $\sin\alpha = \frac{3\sqrt{34}}{34}$, $\cos\alpha = -\frac{5\sqrt{34}}{34}$

11. (Section 1.4) Determine which of the following is undefined.

a) $\cot 90^\circ$ b) $\sin 45^\circ$ c) $\tan 90^\circ$ d) $\sec 180^\circ$

12. (Section 1.4) List the possible values of $\sin\theta$ if $\theta$ is a quadrantal angle.

a) $1, 2, 1, 2$ b) 0 c) $1, 1$ d) $1, 0, 1$

13. (Section 2.1) What is the cofunction of $\cos 31^\circ 19'$

a) $\sin 121^\circ 19'$ b) $\cos 58^\circ 41'$ c) $\sin 58^\circ 41'$ d) $\cos 121^\circ 19'$

14. (Section 2.1) Solve the equation. Assume all angles are acute angle

$$\tan(\beta + 10^\circ) = \cot(2\beta - 10^\circ).$$

a) $\beta = 15^\circ$ b) $\beta = 30^\circ$ c) $\beta = 45^\circ$ d) $\beta = 50^\circ$

15. (Section 2.1) Which of the following has the same absolute value as $\sin 195^\circ 29'$

a) $\sin 95^\circ 29'$

b) $\sin 85^\circ 31'$

c) $\sin 25^\circ 31'$

d) None of these

**Free response - CALCULATORS NOT ALLOWED: Show all work in the space provided. Full credit will be given only if all steps are shown justifying your answer. Please write neatly and carefully, if I cannot read your handwriting, you will receive NO credit. Scratch work will not be graded.**

16. (5 points) (Section 1.1) Find the angle of smallest positive measure coterminal with $699^\circ$

17. (5 points) (Section 1.2) One angle of a right triangle has measure $49^\circ 39'$. Find the measure of the other acute angle.

18. (5 points) (Section 1.3) Evaluate

$$\sin^2 270^\circ + 3\tan 180^\circ - 5\cos 180^\circ.$$

19. (5 points) (Section 1.4) Find $\tan\alpha$ and $\sec\alpha$ given that $\cos\alpha = \dfrac{3}{5}$ and $\sin\alpha > 0$

20. (5 points) (Section 2.1) Find $\sin A$, $\cos A$ and $\tan A$ for the figure below. (Note that $s$ and $h$ are some constants).

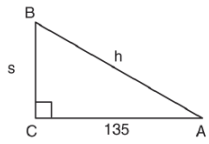


Figure 2: Figure for Question 20

END OF EXAM