Dual Credit Precalculus Practice Placement Test
For students seeking Precalculus or Dual Credit Precalculus

FOR EACH OF THE BELOW, PLEASE BE PREPARED TO SHOW ALL YOUR STEPS.

Simplify. Assume all variables are positive.

1. $\sqrt[4]{\dfrac{80}{9}}$

2. $8^{-4/3}$

3. $\sqrt[4]{18d^5 e^{10} f^{12}}$

4. $\left(4g^4 h^2\right)^{1/2}$

5. $\left(\dfrac{p^3}{q^6}\right)^3$

Solve and Check.

6. $3(x+1)^{1/5} + 5 = 11$

7. $\sqrt{2x-3} = \dfrac{1}{2}x$

Solve and check:

8. **Evaluate:** $\log_3 243$

9. **Evaluate:** $\log_{26} 39$

10. **Simplify:** $\log_2 (0.25)^x$

11. **Expand:** $\log_2 \dfrac{x}{y^3}$

12. **Condense:** $5\ln y + \ln 3$

13. $4^{4x} = 16^{x+1}$

14. $8^x = 32$

15. A new motorboat cost $10000. The value of the boat decreases by 15% each year. What is the value of the boat after 4 years?

Simplify.

16. $\dfrac{\left(x^2 - y^2\right)^2}{x^2 - xy} \bullet \dfrac{x^2 + y^2}{x^4 - y^4}$

17. $\dfrac{x}{x-4} - \dfrac{x+1}{x+4} + \dfrac{x^2+8}{x^2-16}$

18. $\dfrac{\dfrac{10}{x+1}}{\dfrac{1}{2} + \dfrac{3}{x+1}}$

19. $\left(x+2\right) \div \dfrac{x^2-9x-22}{x^2-121}$

Solve for x and check:

20. $\dfrac{4}{2x-3} + \dfrac{4x}{4x^2-9} = \dfrac{1}{2x+3}$

21. $\dfrac{3}{x} + \dfrac{4}{3x} = \dfrac{13}{9}$

22. $\dfrac{x-5}{-3} = \dfrac{4}{x+2}$

23. A class room has 15 students and 15 desks. How many different seating charts does the teacher have to choose from?

24. If a class ring can be made from 3 different metals, 8 different designs and 12 different stones, how many different class rings are possible if each ring uses 1 kind of metal, two designs and three different stones?

25. What is the probability of drawing a face card or a black card from a standard deck of 52 cards?

26. What is the probability of choosing a jack or a 3 from a standard deck of 52 cards?

27. A and B are two events. $P(A) = 0.69$, $P(B) = 0.21$, and $P(A \text{ and } B) = 0.11$. Are events A and B disjoint? Why or why not? Find the probability of either event A or B happening.

28. Find the mean, median, mode, range and standard deviation for the following data sets. If the data set has an outlier, find the above both with and without the outlier.

      28, 20, 25, 28, 100, 25, 20

29. Find the given probabilities.
    a) $P\left(\overline{x} - 3\sigma \leq x \leq \overline{x} + \sigma\right)$ b) $P\left(x \leq \overline{x} + 2\sigma\right)$

30. The time a fire department takes to arrive at the scene of an emergency is normally distributed with a mean of 6 minutes and a standard deviation of 1 minute. What is the probability that the fire department takes between 4 minutes and 7 minutes to arrive at the scene of an emergency?

For the following find α or x. Find ratios to 4 decimal places and angles to nearest tenth of a degree.

31. $\csc 68.4° = x$

32. $\cot 41.8° = x$

33. $\sin α = .6893$

34. $\tan α = 1.3841$

35. You are standing 100 meters from the base of a building. You estimate that the angle of elevation to the top of the building is 70°. What is the height of the building? Suppose one of your friends is at the top of the building. What is the distance between you and your friend?

36. $a = 4$, $c = 3$, $\angle B = 85°$. Find b.

37. $b = 8$, $\angle A = 40°$, $\angle B = 30°$. Find a.

38. Find the area: $a = 5$ ft., $b = 4$ ft, $\angle C = 20°$

Evaluate the following. Give an exact answer in reduced radical form (not a decimal):

39. $\sin (330°)$ 40. $\cot (570°)$ 41. $\sec \left(-\dfrac{11\pi}{4}\right)$

Additional Recommended Skill Practice

1. $\left(\dfrac{3g^5}{h^1}\right)^3$

2. a. -3^2 b. $(-3)^2$

3. Solve using any method, x is 2 less than y. 2 more than 3 times y is x.

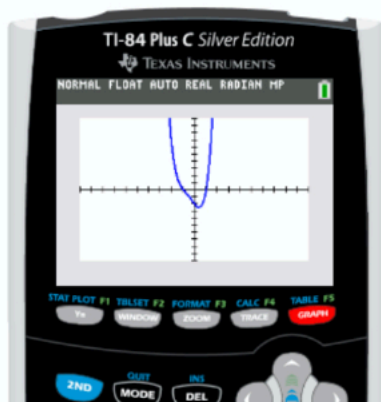4. Factor COMPLETELY

$2ax^2 - 8a + 3x^2 - 12$

5. Graph $y = |x - 2| + 3$

6. Determine the Equation of the Line that passes through points (-1, 3) and (2, -3)

7. Perform the Operation $\begin{bmatrix} 2 & 3 \\ 2 & 3 \end{bmatrix} - \begin{bmatrix} 0 \\ 6 \end{bmatrix}$

8. Find RATIONAL zeros

$$f(x) = x^4 + 2x^3 + x^2 - 2x - 2$$

Plot1 Plot2 Plot3

$\text{NY1} = (x^4) + 2x^3 + x^2 - 2x - 2$

$\text{NY2} =$
$\text{NY3} =$
$\text{NY4} =$
$\text{NY5} =$
$\text{NY6} =$
$\text{NY7} =$

Equation

NORMAL FLOAT AUTO REAL RADIAN MP
PRESS + FOR ΔTbl

X	Y1
0	-2
1	0
2	30
3	136
4	390
5	888
6	1750

9. Find Solutions $3x^2 - 2x - 1 = 0$

10. Simplify $(2i - 3)(3 - 2i)$