ATILIM UNIVERSITY **Department of Mathematics**

Math 103	**Final**	**Dec 25, 2023**
Last name : Name : ID Number :	Instructors : Ayşe D. Ç., E. Sercan Y. Time : 15 : 30 Duration : 70 *minutes*	Signature
25 QUESTIONS ON **3** PAGES, EACH IS 4 POINT.		TOTAL **100** POINTS

1. $42 \div 6 - 3 + 2 \times 5 - 8$:

a) -2 b) 6 c) 16

2. 0.000028 is written in Standard Form is:

a) 28×10^{-6} b) 0.28×10^{-3} c) 2.8×10^{-5}

3. If 20% of a certain lenght is 300 cm, the complete lenght is:

a) 60 cm b) 1500 cm c) 6000 cm

4. Find the circumference of a circle that has diameter of 14 cm.

a) 14π cm b) 28π cm c) 49π cm

5. Find the volume of a cone of radius 6 cm and height 7 cm.

a) 252π cm^3 b) 42π cm^3 c) 84π cm^3

6. Calculate the total surface area of a solid cylinder of radius 4 cm and height 6 cm.

a) 48π cm^2 b) 80π cm^2 c) 20π cm^2

7. Convert 3.375_{10} into bicimal.

a) 11.011_2 b) 101.011_2 c) 11.11_2

8. $523_8 - 146_8$ is equal to:

a) 355_8 b) 377_8 c) 375_8

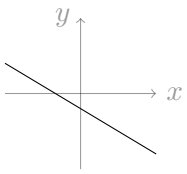
9. Simultaneous equations are given by $3x + 5y = 19$ and $5x + 3y = 21$. What is the value of y?

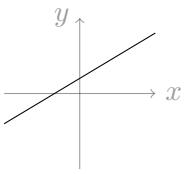
a) -3 b) 2 c) 4

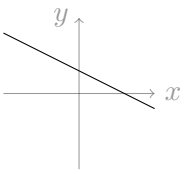
10. If $\log_2 3 = 1.585$, then $\log_2 48$ is:
a) 4.585 b) 3.585 c) 5.585

11. Find the gradient of the straight line that passes through the points $(2, 7)$ and $(4, 15)$.
a) 4 b) 2 c) 8

12. Which of the following diagram represent the graph of the linear equation $2y = 4x + 7$?

a) 

b) 

c) 

13. What is the gradient of the straight line $3y = 18 - 9x$?
a) -9 b) 6 c) -3

14. Which of the following equations produces a quadratic curve?
a) $y = x^3 - 2x^2 + x$ b) $y = x^2 + x - 2$ c) $y = \frac{3}{x} + 5$

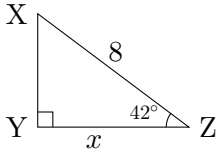
15. Factorise $x^2 + 3x - 10$.
a) $(x + 2)(x - 5)$ b) $(x - 2)(x + 5)$ c) $(x - 2)(x - 5)$

16. Express the point $(r, \theta) = (-5, 120°)$ in Cartesian coordinates (x, y).
a) $(5\cos(300°), 5\sin(300°))$ b) $(5\cos(320°), 5\sin(320°))$ c) $(5\cos(200°), 5\sin(200°))$

17. Express the point $(10, 24)$ in Polar coordinates (r, θ) if $\tan^{-1}\left(\frac{5}{12}\right) = 22.62°$ and $\tan^{-1}\left(\frac{12}{5}\right) = 67.38°$
a) $(13, 22.62°)$ b) $(26, 67.38°)$ c) $(26, 22.62°)$

18. In the following right-angled triangle XYZ, the expression for the lenght x is:

a) $8\sin(42°)$ b) $\frac{8}{\cos(42°)}$ c) $8\cos(42°)$



19. Angles that add up to 90° are called:

a) supplementary b) complimentary c) subordinate

20. Of the following three pairs of straight line equations, which pair are parallel to each other?

a) $3y = 9x + 14$, $y = 3x + 5$ b) $y = 2x + 8$, $y = 8x + 2$ c) $2y = x + 5$, $y = -2x + 3$

21. The solutions of the equation $5x^2 - 8x + 1 = 0$ are:

a) $\frac{4}{5} - \frac{\sqrt{10}}{5}$, $\frac{4}{5} + \frac{\sqrt{10}}{5}$ b) $\frac{4}{5} - \frac{\sqrt{11}}{5}$, $\frac{4}{5} + \frac{\sqrt{11}}{5}$ c) $\frac{4}{5} - \frac{\sqrt{55}}{5}$, $\frac{4}{5} + \frac{\sqrt{55}}{5}$

22. Two angles are supplementary. If one of them is 70°, what is the size of the other?

a) 20° b) 290° c) 110°

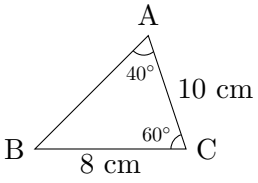
23. Find the area of the sector of a circle which has a radius 9 cm and a sector angle of 40°.

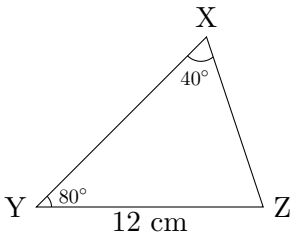
a) π cm^2 b) 9π cm^2 c) 4π cm^2

24. Convert 0.9 radians into degrees.

a) $(162/\pi)°$ b) $(20/\pi)°$ c) $(\pi/9)°$

25. Find XZ.





a) 6 cm b) 15 cm c) 20 cm