Solution

MATHEMATICS

MHT - CET - Mathematics

1.

(b) $\frac{1}{8}$ cot 10^o

Explanation:

$\frac{1}{8}$ cot 10^o

2.

(c) y = x, y + x = 1

Explanation:

y = x, y + x = 1

3. **(a)** $x^2 + y^2$ - 8x - 6y + 16 = 0

Explanation:

$x^2 + y^2$ - 8x - 6y + 16 = 0

4. **(a)** $\left(\frac{a}{2}, \frac{b}{2}\right)$

Explanation:

$\left(\frac{a}{2}, \frac{b}{2}\right)$

5. **(a)** $\frac{5p}{4p+1}$

Explanation:

$\frac{5p}{4p+1}$

6.

(c) $\frac{\pi}{2} - \frac{\alpha}{2}$

Explanation:

$\frac{\pi}{2} - \frac{\alpha}{2}$

7.

(c) 3

Explanation:

3

8.

(c) 210

Explanation:

210

9. **(a)** $\frac{1}{2}\left(1 + \sqrt{1 + 4\log_2 x}\right)$

Explanation:

$\frac{1}{2}\left(1 + \sqrt{1 + 4\log_2 x}\right)$

10.

(d) $\frac{-1}{3}$

Explanation:

$\frac{-1}{3}$

11. **(a)** $x \in (-\infty, oo)$
Explanation:
$x \in (-\infty, \infty)$

12.
(d) $\exists x \in W$, such that $x^2 - 4 = 32$
Explanation:
$\exists x \in W$, such that $x^2 - 4 = 32$

13.
(c) $\begin{bmatrix} \frac{1}{a} & 0 & 0 \\ 0 & \frac{1}{b} & 0 \\ 0 & 0 & \frac{1}{c} \end{bmatrix}$
Explanation:
$\begin{bmatrix} \frac{1}{a} & 0 & 0 \\ 0 & \frac{1}{b} & 0 \\ 0 & 0 & \frac{1}{c} \end{bmatrix}$

14. **(a)** zero matrix
Explanation:
zero matrix

15. **(a)** π
Explanation:
π

16. **(a)** $x = \frac{5\pi}{12}, y = \frac{\pi}{6}$
Explanation:
$x = \frac{5\pi}{12}, y = \frac{\pi}{6}$

17.
(c) $x = 0$
Explanation:
$x = 0$

18. **(a)** $\frac{\pi}{6}$
Explanation:
$\frac{\pi}{6}$

19.
(c) $\frac{2}{\sqrt{3}}\tan^{-1}\left(\frac{1}{\sqrt{3}}\right)$
Explanation:
$\frac{2}{\sqrt{3}}\tan^{-1}\left(\frac{1}{\sqrt{3}}\right)$

20. **(a)** $\frac{1}{3}$ log 2
Explanation:
$\frac{1}{3}$ log 2

21.
(b) 0
Explanation:
0

22.

(c) log 25

Explanation:

log 25

23.

(b) $\hat{i}$

Explanation:

$\hat{i}$

24.

(b) $\hat{i}$

Explanation:

$\hat{i}$

25.

(b) $\frac{10}{3}, \frac{9}{5}$

Explanation:

$\frac{10}{3}, \frac{9}{5}$

26.

(d) -1

Explanation:

-1

27.

(d) all real values of 'a'

Explanation:

all real values of 'a'

28. **(a)** 8

Explanation:

8

29.

(b) -1

Explanation:

-1

30.

(c) 12

Explanation:

12

31.

(d) $-\frac{2xy+\sec^2 x+y\sec x\tan x}{x^2+\sec x}$

Explanation:

$-\frac{2xy+\sec^2 x+y\sec x\tan x}{x^2+\sec x}$

32.

(d) $\frac{2(x-\sin x)^{\frac{3}{2}}}{\sqrt{x}}\left(\frac{3}{2}\cdot\frac{1-\cos x}{x-\sin x}-\frac{1}{2x}\right)$

Explanation:

$\frac{2(x-\sin x)^{\frac{3}{2}}}{\sqrt{x}}\left(\frac{3}{2}\cdot\frac{1-\cos x}{x-\sin x}-\frac{1}{2x}\right)$

33. **(a)** $\left(1+\frac{1}{x}\right)^{x}\left[\log\left(1+\frac{1}{x}\right)-\frac{1}{1+x}\right]$

Explanation:

$\left(1+\frac{1}{x}\right)^{x}\left[\log\left(1+\frac{1}{x}\right)-\frac{1}{1+x}\right]$

34. **(a)** $\frac{\sin x-e^{x}}{(\cos x+e^{x})^{3}}$

Explanation:

$\frac{\sin x-e^{x}}{(\cos x+e^{x})^{3}}$

35.

(b) 9 units

Explanation:

9 units

36.

(d) Not an extreme point

Explanation:

Not an extreme point

37. **(a)** 110, 70

Explanation:

110, 70

38.

(d) $\frac{x^2}{4}-\frac{x}{4}$ sin 2x - $\frac{1}{8}$ cos 2x + c

Explanation:

$\frac{x^2}{4}-\frac{x}{4}$ sin 2x - $\frac{1}{8}$ cos 2x + c

39.

(b) $\frac{x^4}{4}+\frac{3x^2}{2}+3\log x-\frac{1}{2x^2}+c$

Explanation:

$\frac{x^4}{4}+\frac{3x^2}{2}+3\log x-\frac{1}{2x^2}+c$

40. **(a)** $\frac{2}{3}$ log [$\sqrt{x}$ (x - 3)]

Explanation:

$\frac{2}{3}$ log [$\sqrt{x}$ (x - 3)]

41.

(d) 3

Explanation:

3

42.

(d) 4 sq. units

Explanation:

4 sq. units

43. **(a)** $(1 + x)e^{-x}$
Explanation:
$(1 + x)e^{-x}$

44.
(b) degree 3
Explanation:
degree 3

45.
(c) log [4(x - 2y) + 5] = 4(x + 2y) + c
Explanation:
log [4(x - 2y) + 5] = 4(x + 2y) + c

46.
(d) $\frac{\sqrt{x}}{2}$
Explanation:
$\frac{\sqrt{x}}{2}$

47.
(b) $\frac{11}{20}$
Explanation:
$\frac{11}{20}$

48. **(a)** 0.5
Explanation:
0.5

49.
(b) $\frac{105}{512}$
Explanation:
$\frac{105}{512}$

50.
(b) 2
Explanation:
2