

Final Exam 8

1. [Marks 4] Divide by using long d

$$\frac{x^4 + 3x^3 + x^2 - 6x + 5}{x^2 - 2} = x^2$$

$$\begin{array}{r} x^2 + 3x + 9 + \\ x^2 - 2 \overline{) x^4 + 3x^3 + x^2 - 6x + 5} \\ \underline{-(x^4 - 2x^2)} \\ 3x^3 + 3x^2 - 6x + 5 \\ \underline{-(3x^3 - 6x)} \\ 3x^2 + 5 \\ \underline{-(3x^2)} \\ 5 \end{array}$$

2. [Marks 5] Simplify the following

$$= \frac{\cancel{2}(x^2 - 9)}{(x+4)(x-3)} \cdot \frac{(x+4)\cancel{2}}{\cancel{2}(x^2)}$$

$$= \frac{(x-3)(x+3)(x-1)}{(x-3)(x-1)(x+1)}$$

3. [Marks 4] Ratio

$$\left(\frac{11}{2\sqrt{3}+1}\right)\left(\frac{2}{2}\right)$$

4. [Marks 10] Sol

(a) $3(2x-1)^2$

$$(2x-1)$$

$$2x-1$$

$$2x =$$

$$\boxed{x =}$$

(b) $\sqrt{5x+1} -$

$$\left(\sqrt{5x+1}\right)$$

$$5x+1$$

0

0

5.

6.

S81a

7. Consider

(a) \mathbb{R}

(b) \mathbb{R}

(c) \mathbb{R}

(d) \mathbb{R}

a) $x -$
 $f(x)$

b) $f(x)$

c) $f(x)$

d) y

8. [Marks 12] S

(a) $\left(\frac{1}{4}\right)^{x-1}$

(2^{-2})

2^{-2x}

$\hookrightarrow -2x$

(b) $\ln x + \ln$

$\ln(x$

x^2

x^2

$(x-$

x

(c) $8^{2x} = 9^{x-}$

$\ln 8^{2x}$

$2x \ln$

$2x \ln$

$\ln 9$

$\ln 9$

$x =$

9. [Mar]

$$2 \log t$$

$$= \log t^2$$

=

=

10. [Mar]

$$\sin \theta =$$

$$\sec \theta =$$

=

$$\tan \theta$$

$$\tan^2 \theta =$$

1

LH

0

1

0

83

11

11

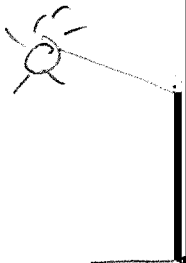
13. [M]

Period

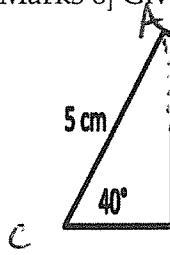
$$\frac{\text{Period}}{4} =$$

X	$\frac{X}{4}$
0	0
2π	$\frac{\pi}{2}$
4π	π
6π	$\frac{3\pi}{2}$
8π	2π

14. [M]
of:



15. [Marks 6] Giv



- (a) Find the
- (b) Find the

a) $\sin 40^\circ$

Area =

b) $c^2 = a^2 + b^2$

$x^2 = 1$

$x^2 = 10$

$x^2 = 9$

$x = 9$

To find

$\frac{\sin \theta}{5}$

\sin

\sin

16 [Marks 6] Consider

(a) Calculate $\|\vec{u} +$

$$\vec{v} + 2\vec{v} = (-3, 1)$$

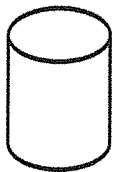
$$= (1, -$$

(b) Calculate the c

$$2\vec{u} = (-6,$$

$$3\vec{v} = (6, -$$

17. [Marks 5] Assume
ment.



Height =

Volume =

$$r = \frac{H_1}{H_2}$$

$$\frac{V_1}{V_2} = r$$