PUBLIC SCHOOL DARBHANGA
SESSION (2020-21)
CLASS-VI
MATHEMATICS
POLYNOMIALS
Worksheet no.2 (answer key)

1. Find the value of the polynomial (x)=5x−4x^2+3

(i) x= 0 (ii) x = – 1 (iii) x = 2

Solution:

Let f(x)= 5x−4x^2+3

(i) When x=0

f(0)=5(0)+4(0)^2+3

=3

(ii) When x= -1

f(x)=5x−4x^2+3

f(−1)=5(−1)

−4(−1)^2+3

=−5−4+3

=−6

(iii) When x=2

f(x)=5x−4x^2+3 f(2)=5(2)

−4(2)^2+3

=10−16+3

=−3

2. Find p(0), p(1) and p(2) for each of the following polynomials:

(i) p(y)=y^2−y+1

Solution:

p(y)=y^2−y+1

∴p(0)=(0)^2−(0)+1=1 p(1)=(1)^2−

(1)+1=1 p(2)=(2)^2−(2)+1=3

(ii) $p(t)=2+t+2t^2$

$-t^3$ Solution:

$p(t)= 2+t+2t^2-t^3$

$\therefore p(0)=2+0+2(0)^2-(0)^3=2$

$p(1)=2+1+2(1)^2-(1)^3=2+1+2-1=4$ $p(2)=2+2+2(2)^2-(2)^3=2+2+8-8=4$

(iii)$p(x)=x^3$

Solution:

$p(x)=x^3$

$\therefore p(0)=(0)^3=0$ $p(1)=(1)^3=1$

$p(2)=(2)^3=8$

(iv)$p(x)=(x-1)(x+1)$

Solution:

$p(x)=(x-1)(x+1)$

$\therefore p(0)=(0-1)(0+1)=(-1)(1)=-1$ $p(1)=(1-1)(1+1)=0(2)=0$ $p(2)=(2-1)(2+1)=1(3)=3$

3. Verify whether the following are zeroes of the polynomial, indicated against them.

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

Solution:

For, $x=-\frac{1}{3}$, $p(x)= 3x+1=-2$

$\therefore p(-\frac{1}{3})=3(-\frac{1}{3})+1=-1+1=$ is a $\therefore -\frac{1}{3}$ zero of p(x

(ii) $p(x)=5x-\pi$, $x=\frac{4}{5}$

Solution:

For, $x=\frac{4}{5}$ $p(x)=5x\frac{4}{5}-\pi$

$\therefore p(\frac{4}{5})=5(\frac{4}{5})-$

$\frac{4}{5}$ $\therefore$ I is not a zero of px p(x).

(iii) $p(x)=x^2-1$, $x=1$, -1 Solution:

For, x=1, −1;

$p(x)=x^2-1$

$\therefore p(1)=1^2-1=1-1=0$ $p(-1)$

=

$(-1)^2-1=1-1=0$

∴1, −1 are zeros of p(x).

(iv) p(x)=(x+1)(x−2), x= −1, 2

Solution: For,

x=−1,2;

p(x)=(x+1)(x−2)

∴p(−1)=(−1+1)(−1−2)

=((0)(−3))=0

p(2)=(2+1)(2−2)=(3)(0)=0

∴−1,2 are zeros of p(x).

(v) $p(x)=x^2$, x=0

Solution: For, x=0

$p(x)= x^2$ $p(0)=0^2=0$

∴0 is a zero of p(x).

4. Find the zero of the polynomial in each of the following cases:

(i) p(x) = x + 5

Solution:

p(x)=x+5

⇒x+5=0

⇒x=−5

∴-5 is a zero polynomial of the polynomial p(x).

(ii) p(x) = x – 5

Solution:

p(x)=x−5

⇒x−5=0

⇒x=5

∴5 is a zero polynomial of the polynomial p(x).

(iii) p(x) = 2x + 5

Solution:

p(x)=2x+5

⇒2x+5=0

⇒2x=−5

$\Rightarrow x=-\frac{5}{2}$

$\therefore x=--=-\frac{5}{2}$ is a zero polynomial of the polynomial p(x).

(iv) p(x) = 3x – 2

Solution:

p(x)=3x–2

$\Rightarrow$3x−2=0

$\Rightarrow$3x=2

$\frac{2}{3}$

$\Rightarrow x=$

$\therefore$ $^{2}x=$ is a zero polynomial of the polynomialpx

3

(v) p(x) = 3x

Solution:

p(x)=3x

$\Rightarrow$3x=0

$\Rightarrow$x=0

$\therefore$0 is a zero polynomial of the polynomial p(x).

(vi)p(x) = ax, a≠0

Solution:

p(x)=ax

$\Rightarrow$ax=0

$\Rightarrow$x=0

$\therefore$x=0 is a zero polynomial of the polynomial p(x).

(vii) p(x) = cx + d, c ≠ 0, c, d are real numbers. Solution:

p(x)= cx + d $\Rightarrow$ cx + d =0

$\frac{-d}{c}$

$\Rightarrow x=$

c

$\therefore$ $x=\frac{-d}{}$ is a zero polynomial of the polynomial

p(x). $\frac{}{c}$

5. Find the remainder when x^3+3x^2+3x+1 is divided by

(i) x+1

Solution:

$x+1=0$

$\Rightarrow x=-1$

$\therefore$Remainder:

$p(-1)=(-1)^3+3(-1)^2+3(-1)+1$

$=-1+3-3+1$

$=0$

(ii) x+π

Solution:

$x+\pi=0$

$\Rightarrow x=-\pi$

$\therefore$Remainde

r:

$p(0)=(-\pi)^3+3(-\pi)^2+3(-\pi)+1$

$=-\pi^3+3\pi^2-3\pi+1$

(iii) 5+2x

Solution:

$5+2x=0$

$\Rightarrow 2x=-5$

$\Rightarrow x=-\frac{5}{2}$