

แบบฝึกหัดเรื่อง Real Number

ชื่อ-นามสกุล
เลขประจำตัว $\qquad$ No. 1

1. กำหนด $p(x)=1+2 x^{5}-2 x^{3}-x^{2}-4 x-6 x^{4}$

$$
q(x)=2 x^{5}-4 x^{4}+a x^{2}-2 x^{3}+c x+1 \text { ถ้า } p(x)=q(x) \text { จงหค่า } a, b \text { และ } c
$$

ตau $a=-1 \quad b=4 \quad c=-4$
2. กำหนด $p(x)=x^{2}+5, q(x)=4 x^{2}+x+5$

$$
m=5
$$

2.1) $p(x)+q(x)=\left(x^{2}+5\right)+\left(4 x^{2}+x+5\right)$ $=5 x^{2}+x+10$
2.2) $p(x)-q(x)=\left(x^{2}+5\right)-\left(4 x^{2}+x+5\right)$

$$
=-3 x^{2}-x
$$

2.3) $q(x)-p(x)=\left(4 x^{2}+x+5\right)-\left(x^{2}+5\right)$

$$
=3 x^{2}+x
$$

2.5) $p(x) \cdot q(x)=\left(x^{2}+5\right)\left(4 x^{2}+x+5\right)$

$$
\begin{aligned}
= & 4 x^{4}+x^{3}+5 x^{2}+20 x^{2}+5 x \\
& +25 \\
= & 4 x^{4}+x^{3}+25 x^{2}+5 x+25
\end{aligned}
$$

2.4) $m p(x)-n q(x)=5\left(x^{2}+5\right)-4\left(4 x^{2}+x+5\right)$

$$
=5 x^{2}+25-16 x^{2}-4 x-20
$$

$$
=-11 x^{2}-4 x+5
$$

2.6) $p^{2}(x)=\left(x^{2}+5\right)^{2}$
$=x^{4}+10 x^{2}+25$
3. กำหนด $p(x)=x^{2}-4 x+2, q(x)=x^{3}+3 x^{2}+2$ จงหา $p(x) \cdot q(x)$

$$
\begin{aligned}
p(x) \cdot q(x) & =\left(x^{2}-4 x+2\right)\left(x^{3}+3 x^{2}+2\right) \\
& =x^{5}+3 x^{4}+2 x^{2}-4 x^{4}-12 x^{3}-8 x+2 x^{3}+6 x^{2}+4
\end{aligned}
$$

ตอบ $p(x): q(x)=x^{5}=x^{4}-10 x^{3}+8 x^{2}-8 x+4$
4. ถ้า $E q: x^{2}-5 x+6=(x-a)(x-b)$ จงหา $a+b$ (2 $a b$

$$
x^{2}-5 x+b=(x-3)(x-2) \rightarrow a=3 \text { и. }: b=2
$$

5. ถ้า $E q: x^{2}-12 x+52=(x-a)^{2}+b^{2}$ :มื่อ $b>0$ จงหา (1) $a$ (2) $b$ (3) $a b$ $x^{2}-2(x)(6)+b^{2}-b^{2}+52=(x-6)^{2}+4^{2}$

ตอu $0 a=b$
2 $b=4$
(3) $a b=24$
6. กำหนด $D(x)=x^{2}+2 x, Q(x)=x^{2}-3 \quad$ และ $R(x)=6 x-5$ จงหาพหุนาม $P(x)$ ที่เมื่อหารด้วย $D(x)$ แล้วได้ผลหารคือ $Q(x)$ และเศษหลือคือ $R(x)$

$$
\text { बin } \begin{aligned}
\left.\frac{P(x)}{D(x)}=Q(x)+\frac{R(x)}{D(x)} \quad Q^{2}\right]=P(x) & =D(x) \cdot Q(x)+R(x) \\
& =\left(x^{2}+2 x\right)\left(x^{2}-3\right)+(6 x-5)
\end{aligned}
$$

ตอบ $P(x)=x^{4}+2 x^{3}-3 x^{2}-5$
7. จงหาผลหาร $Q(x)$ และเศษหลือ $R(x)$ จากการทารพหุนาม $a(x)$ ด้วยหหุนาม $b(x)$
7.1) $\begin{aligned} a(x) & =5 x^{5}-x^{4}-4 x^{3}+x^{2}-3 x+2 \\ b(x) & =x^{2}\end{aligned}$
$\frac{5 x^{5}-x^{4}-4 x^{3}+x^{2}-3 x+2}{x^{2}}$
$=5 x^{3}-x^{2}-4 x+1+\frac{-3 x+2}{x^{2}}$
ตอบ $Q(x)=5 x^{3}-x^{2}-4 x+1$
$R(x)=-3 x+2$
7.3) $a(x)=x^{3}+4$

$$
b(x)=x^{2}+7
$$

$$
\begin{aligned}
\frac{x^{3}+4}{x^{2}+7} & =\frac{x\left(x^{2}+7\right)-7 x+4}{x^{2}+7} \\
& =x+\frac{-7 x+4}{x^{2}+7}
\end{aligned}
$$

ตอบ $Q(x)=x$

$$
R(x)=-7 x+4
$$

7.5) $a(x)=3 x^{5}-2$

$$
b(x)=x^{2}-2
$$

$$
\frac{3 x^{5}-2}{x^{2}-2}=\frac{3 x\left(x^{2}-2\right)+6 x^{3}-2}{x^{2}-2}
$$

$$
=\frac{3 x\left(x^{2}-2\right)}{x^{2}-2}+\frac{6 x\left(x^{2}-2\right)+12 x-2}{x^{2}-2}
$$

$$
=3 x+6 x+\frac{12 x-2}{x^{2}-2}
$$

ตอบ $Q(x)=3 \underline{x}+6$

$$
R(x)=12 x-2
$$

7.2) $a(x)=5 x^{5}-x^{4}-4 x^{3}+x^{2}-3 x+2$,
$b(x)=x^{3}$
$\frac{5 x^{5}-x^{4}-4 x^{3}+x^{2}-3 x+2}{x^{3}}$
$=5 x^{2}-x-4+\frac{x^{2}-3 x+2}{x^{3}}$

- ตอบ $Q(x)=5 x^{2}-x-4$

$$
R(x)=x^{2}-3 x+2
$$

7.4) $a(x)=x^{4}+4 x^{3}+3 x^{2}-x+3$

$$
b(x)=x+3
$$

$$
\times(-3) \begin{array}{rrrrr}
1 & 4 & 3 & -1 & 3 \\
& -3 & -3 & 0 & 3 \\
\hline 1 & 1 & 0 & -1 & 6 \\
\hline
\end{array}
$$

$$
\frac{x^{4}+4 x^{3}+3 x^{2}-x+3}{x+3}=x^{3}+x^{2}-1+\frac{6}{x+3}
$$

ตอบ $Q(x)=x^{3}+x^{2}-1$

$$
R(x)=-6
$$

7.6) $a(x)=x^{6}+4 x^{3}-3$

$$
\begin{aligned}
b(x)= & x^{3}+1 \\
\frac{x^{6}+4 x^{3}-3}{x^{3}+1} & =\frac{x^{3}\left(x^{3}+11-x^{3}+4 x^{3}-3\right.}{x^{3}+1} \\
& =\frac{x^{3}\left(x^{3}+1\right)+3\left(x^{3}+1\right)-3-3}{x^{3}+1} \\
& =x^{3}+3-\frac{6}{x^{3}+1}
\end{aligned}
$$

ตอบ $Q(x)=x^{3}+3$

$$
R(x)=-6
$$ Real01 for No. 1

$$
\begin{gathered}
N o 01=\left[\begin{array}{c}
\mathrm{p}(x)=1+2 x^{5}-2 x^{3}-x^{2}-4 x-b x^{4} \\
\mathrm{q}(x)=2 x^{5}-4 x^{4}+a x^{2}-2 x^{3}+c x+1
\end{array}\right] \\
N o 02=\left[\begin{array}{c}
\mathrm{p}(x)=x^{2}+5 \\
\mathrm{q}(x)=4 x^{2}+x+5 \\
m=5 \\
n=4
\end{array}\right] \\
N o 03=\left[\begin{array}{c}
\mathrm{p}(x)=x^{2}-4 x+2 \\
\mathrm{q}(x)=x^{3}+3 x^{2}+2
\end{array}\right] \\
\text { No07 }=\left[\begin{array}{r}
\text { No04 }=\left(E q=\left[x^{2}-5 x+6=(x-a)(x-b)\right]\right) \\
N o 05=\left(E q=\left[x^{2}-12 x+52=(x-a)^{2}+b^{2}\right]\right) \\
N o 06=\left[\mathrm{D}(x)=x^{2}+2 x, \mathrm{Q}(x)=x^{2}-3, \mathrm{R}(x)=6 x-5\right]
\end{array}\right. \\
.1=\left[\begin{array}{r}
\mathrm{a}(x)=5 x^{5}-x^{4}-4 x^{3}+x^{2}-3 x+2 \\
\mathrm{~b}(x)=x^{2}
\end{array}\right] \quad 2=\left[\begin{array}{r}
\mathrm{a}(x)=5 x^{5}-x^{4}-4 x^{3}+x^{2}-3 x+2 \\
\mathrm{~b}(x)=x^{3}
\end{array}\right] \\
.3=\left[\begin{array}{r}
\mathrm{a}(x)=x^{3}+4 \\
\mathrm{~b}(x)=x^{2}+7
\end{array}\right] \quad 4=\left[\begin{array}{c}
\mathrm{a}(x)=x^{4}+4 x^{3}+3 x^{2}-x+3 \\
\mathrm{~b}(x)=x+3
\end{array}\right] \\
.5=\left[\begin{array}{r}
\mathrm{a}(x)=3 x^{5}-2 \\
\mathrm{~b}(x)=x^{2}-2
\end{array}\right]
\end{gathered}
$$

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$$
\begin{aligned}
& \text { Ansl }=[a=-1, b=4, c=-4] \\
& \text { Ans } 2=\left[\begin{array}{cc}
. l=\left[\mathrm{p}(x)+\mathrm{q}(x)=5 x^{2}+x+10\right] & .2=\left[\mathrm{p}(x)-\mathrm{q}(x)=-3 x^{2}-x\right] \\
.3=\left[\mathrm{q}(x)-\mathrm{p}(x)=3 x^{2}+x\right] & .4=\left[\mathrm{mp}(x)-\mathrm{nq}(x)=-11 x^{2}-4 x+5\right] \\
.5=\left[\mathrm{p}(x) \mathrm{q}(x)=4 x^{4}+x^{3}+25 x^{2}+5 x+25\right] & .6=\left[[\mathrm{p}(x)]^{2}=x^{4}+10 x^{2}+25\right]
\end{array}\right] \\
& \text { Ans3 }=\left[\mathrm{p}(x) \mathrm{q}(x)=x^{5}-x^{4}-10 x^{3}+8 x^{2}-8 x+4\right] \\
& \text { Ans } 4=[a+b=5, a b=6], \quad, A n s 5=[a=6, b=4, a b=24] \\
& \text { Ans } 6=\left[\mathrm{P}(x)=x^{4}+2 x^{3}-3 x^{2}-5\right] \\
& A n s 7=\left[\begin{array}{cc}
.1=\left[\begin{array}{c}
\mathrm{Q}(x)=5 x^{3}-x^{2}-4 x+1 \\
\mathrm{R}(x)=-3 x+2
\end{array}\right] & .2=\left[\begin{array}{l}
\mathrm{Q}(x)=5 x^{2}-x-4 \\
\mathrm{R}(x)=x^{2}-3 x+2
\end{array}\right] \\
.3=\left[\begin{array}{c}
\mathrm{Q}(x)=x \\
\mathrm{R}(x)=-7 x+4
\end{array}\right] & .4=\left[\begin{array}{c}
\mathrm{Q}(x)=x^{3}+x^{2}-1 \\
\mathrm{R}(x)=6
\end{array}\right] \\
.5=\left[\begin{array}{c}
\mathrm{Q}(x)=3 x^{3}+6 x \\
\mathrm{R}(x)=12 x-2
\end{array}\right] & .6=\left[\begin{array}{c}
\mathrm{Q}(x)=x^{3}+3 \\
\mathrm{R}(x)=-6
\end{array}\right]
\end{array}\right]
\end{aligned}
$$

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