

# CH 10 Test

1.  $\sqrt{49x^2} = 7|x|$

2.  $\sqrt[3]{-343x^3} = -7x$

3.  $f(x) = \sqrt[3]{x-6}$ ,  $D = \mathbb{R} \rightarrow$  all real Nos.

4.  $f(x) = \sqrt{-8x+15}$

$$D = \{x \mid -8x+15 \geq 0\} = \{x \mid -8x \geq -15\}$$

$$= \{x \mid 8x \leq 15\} = \{x \mid x \leq 15/8\}$$

5.  $4\sqrt{w} \cdot 5\sqrt{w^2} = w^{1/4} \cdot w^{2/5}$

$$= w^{5/20} \cdot w^{8/20} = w^{13/20} = 20\sqrt{w^{13}}$$

6.  $\frac{7\sqrt{u^4}}{9\sqrt{u^4}} = \frac{u^{4/1}}{u^{4/1}} = u^{\frac{4}{1} - \frac{4}{1}} = u^{\frac{36-28}{63}} = u^{8/63}$

$$= 63\sqrt{u^8}$$

7.  $\sqrt{180} - 8\sqrt{80} - 4\sqrt{245}$

$$= \sqrt{36 \cdot 5} - 8\sqrt{16 \cdot 5} - 4\sqrt{49 \cdot 5}$$

$$= 6\sqrt{5} - 8 \cdot 4\sqrt{5} - 4 \cdot 7\sqrt{5}$$

$$= 6\sqrt{5} - 32\sqrt{5} - 28\sqrt{5} = 6\sqrt{5} - 60\sqrt{5} = -54\sqrt{5}$$

8.  $8\sqrt[5]{m^{11}p^7} - 5m^2p\sqrt[5]{mp^2}$

$$= 8\sqrt[5]{m^{10}p^5 \cdot mp^2} - 5m^2p\sqrt[5]{mp^2}$$

$$= 8m^2p\sqrt[5]{mp^2} - 5m^2p\sqrt[5]{mp^2}$$

$$= 3m^2p\sqrt[5]{mp^2}$$

9.  $\frac{(7-\sqrt{6})(7-\sqrt{6})}{(7+\sqrt{6})(7-\sqrt{6})} = \frac{49-14\sqrt{6}+6}{49-6} = \frac{55-14\sqrt{6}}{43}$

10.  $\sqrt{3x-2} + \sqrt{11+x} = -1$

$$\sqrt{3x-2} = -\sqrt{11+x} - 1 \Rightarrow 3x-2 = 11+x+1+2\sqrt{11+x}$$

$$3x-2 = 12+x+2\sqrt{11+x}$$

$$2x-14 = 2\sqrt{11+x} \Rightarrow x-7 = \sqrt{11+x}$$

$$x^2-14x+49 = 11+x \Rightarrow x^2-15x+38 = 0$$

Skip this question !!

11)  $\sqrt{2x+3} - \sqrt{x+1} = 1$

$$\sqrt{2x+3} = \sqrt{x+1} + 1$$

$$2x+3 = x+1+1+2\sqrt{x+1}$$

$$2x+3 = x+2+2\sqrt{x+1}$$

$$x+1 = 2\sqrt{x+1} \Rightarrow x^2+2x+1 = 4(x+1)$$

$$x^2+2x+1 = 4x+4 \Rightarrow x^2-2x-3 = 0$$

$$(x-3)(x+1) = 0$$

$x=3$  or  $x=-1$  CHECK

$$\sqrt{6+3} - \sqrt{4} \stackrel{?}{=} 1$$

$$\sqrt{9} - \sqrt{4} = 1$$

$$3-2=1$$

True

$$\sqrt{-2+3} - \sqrt{-1+1} \stackrel{?}{=} 1$$

$$\sqrt{1} - \sqrt{0} = 1$$

$$\sqrt{1} = 1$$

True

The solution is 3 or -1

12)  $\frac{(3+3i)(5-2i)}{(5+2i)(5-2i)} = \frac{15-6i^2+9i}{25-4i^2}$

$$= \frac{21+9i}{25+4} = \frac{21+9i}{29}$$

$$= \frac{21}{29} + \frac{9}{29}i$$

13)  $i^{-17} = \frac{1}{i^{17}} = \frac{1 \cdot i}{i^{17} \cdot i} = \frac{i}{i^{18}}$

$$= \frac{i}{(i^2)^9} = \frac{i}{(-1)^9} = \frac{i}{-1} = -i$$