

True or False

Chapter R

1. (a) $\sqrt{4^2+3^2} = 4+3$ ___	1. (b) $\sqrt{(4+3)^2} = 4+3$ ___
2. (a) $\sqrt{a^2+b^2} = a+b$ ___	2. (b) $\sqrt{(a+b)^2} = a+b $ ___
3. (a) $\frac{2}{\sqrt{2}} = \sqrt{2}$ ___	3. (b) $\frac{1}{\sqrt{5}} = \frac{\sqrt{5}}{5}$ ___
4. (a) $\frac{2+\sqrt{3}}{4} = \frac{1+\sqrt{3}}{2}$ ___	4. (b) $\frac{2+2\sqrt{3}}{4} = \frac{1+\sqrt{3}}{2}$ ___
5. (a) $\sqrt{a^2} = a$ ___	5. (b) $\sqrt[3]{a^3} = a$ ___
6. (a) $\frac{1}{2+3} = \frac{1}{2} + \frac{1}{3}$ ___	6. (b) $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$ ___
7. (a) $\frac{1}{a+b} = \frac{1}{a} + \frac{1}{b}$ ___	7. (b) $\frac{1}{a} + \frac{1}{b} = \frac{b+a}{ab}$ ___
8. (a) $a^{-1} + b^{-1} = \frac{1}{a+b}$ ___	8. (b) $a^{-1} + b^{-1} = \frac{1}{a} + \frac{1}{b} = \frac{b+a}{ab}$ ___

Chapter 1

1. (a) If $f(x) = \begin{cases} -x+1, & x < 0 \\ x^2, & x \geq 0 \end{cases}$ then $f(2) = -1$ or 4 ___	1. (b) If $f(x) = \begin{cases} -x+1, & x < 0 \\ x^2, & x \geq 0 \end{cases}$ then $f(2) = 4$ ___
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Chapter 2

2. (a) $ x-3 > 1$ means: $1 < x-3 < -1$ ___	2. (b) $ x-3 > 1$ means: $x-3 > 1$ or $x-3 < -1$ ___
3. (a) Quadratic Formula For $ax^2 + bx + c = 0$ $x = -b \pm \frac{\sqrt{b^2 - 4ac}}{2a}$ ___	3. (b) Quadratic Formula For $ax^2 + bx + c = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ ___
4. (a) $\sqrt{-4}\sqrt{-9} = \sqrt{36} = 6$ ___	4. (b) $\sqrt{-4}\sqrt{-9} = 2i \cdot 3i = -6$ ___

Chapter 3

1. (a) For the function $f(x) = x^4 - 16$ All the zeros are: ± 2 ___	1. (b) For the function $f(x) = x^4 - 16$ All the zeros are: $\pm 2, \pm 2i$ ___
2. (a) The remainder found by dividing $f(x) = 3x^{1000} - 2x^{999} + 1$ by $x - 1$ is 2. ___	2. (b) $(x - 1)$ is a factor of $f(x) = 3x^{1000} - 2x^{999} - 1$ ___

Chapter 4

1. (a) $f^{-1}(x) = \frac{1}{f(x)}$ ___	1. (b) $f^{-1}(x)$ is the inverse function of $f(x)$. ___
2. (a) If $f(x) = x + 1$, then $f^{-1}(x) = \frac{1}{x + 1}$ ___	2. (b) If $f(x) = x + 1$, then $f^{-1}(x) = x - 1$ ___
3. (a) $\ln(a + b) = \ln a + \ln b$ ___	3. (b) $\ln(ab) = \ln a + \ln b$ ___
4. (a) $\ln(a - b) = \ln a - \ln b$ ___	4. (b) $\ln\left(\frac{a}{b}\right) = \ln a - \ln b$ ___
5(a) $\ln\left(\frac{a}{b}\right) = \frac{\ln a}{\ln b}$ ___	5. (b) $\ln\left(\frac{a}{b}\right) = \ln a - \ln b$ ___
6. (a) $(\ln x)^2 = 2 \ln x$ ___	6. (b) $\ln(x^2) = 2 \ln x$ ___

Answer Keys

Chapter R

1. (a) $\sqrt{4^2+3^2} = 4+3$ <u>F</u>	1. (b) $\sqrt{(4+3)^2} = 4+3$ <u>T</u>
2. (a) $\sqrt{a^2+b^2} = a+b$ <u>F</u>	2. (b) $\sqrt{(a+b)^2} = a+b $ <u>T</u>
3. (a) $\frac{2}{\sqrt{2}} = \sqrt{2}$ <u>T</u>	3. (b) $\frac{1}{\sqrt{5}} = \frac{\sqrt{5}}{5}$ <u>T</u>
4. (a) $\frac{2+\sqrt{3}}{4} = \frac{1+\sqrt{3}}{2}$ <u>F</u>	4. (b) $\frac{2+2\sqrt{3}}{4} = \frac{1+\sqrt{3}}{2}$ <u>T</u>
5. (a) $\sqrt{a^2} = a$ <u>T only when a is nonnegative,</u> <u>i.e. it is false if a is negative.</u>	5. (b) $\sqrt[3]{a^3} = a$ <u>T</u>
6. (a) $\frac{1}{2+3} = \frac{1}{2} + \frac{1}{3}$ <u>F</u>	6. (b) $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$ <u>T</u>
7. (a) $\frac{1}{a+b} = \frac{1}{a} + \frac{1}{b}$ <u>F</u>	7. (b) $\frac{1}{a} + \frac{1}{b} = \frac{b+a}{ab}$ <u>T</u>
8. (a) $a^{-1} + b^{-1} = \frac{1}{a+b}$ <u>F</u>	8. (b) $a^{-1} + b^{-1} = \frac{1}{a} + \frac{1}{b} = \frac{b+a}{ab}$ <u>T</u>

Chapter 1

1. (a) If $f(x) = \begin{cases} -x+1, & x < 0 \\ x^2, & x \geq 0 \end{cases}$, then $f(2) = -1$, or 4 <u>F</u>	1. (b) If $f(x) = \begin{cases} -x+1, & x < 0 \\ x^2, & x \geq 0 \end{cases}$, then $f(2) = 4$ <u>T</u>
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Chapter 2

2. (a) $ x-3 > 1$ means: $1 < x-3 < -1$ <u>F</u>	2. (b) $ x-3 > 1$ means: $x-3 > 1$ or $x-3 < -1$ <u>T</u>
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<p>2. (a) Quadratic Formula</p> <p>For $ax^2 + bx + c = 0$</p> $x = -b \pm \frac{\sqrt{b^2 - 4ac}}{2a} \quad \underline{F}$	<p>2. (b) Quadratic Formula</p> <p>For $ax^2 + bx + c = 0$</p> $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad \underline{T}$
<p>4. (a) $\sqrt{-4}\sqrt{-9} = \sqrt{36} = 6 \quad \underline{F}$</p>	<p>4. (b) $\sqrt{-4}\sqrt{-9} = 2i \cdot 3i = -6 \quad \underline{T}$</p>

Chapter 3

<p>1. (a)</p> <p>For the function $f(x) = x^4 - 16$</p> <p>All the zeros are: $\pm 2 \quad \underline{F}$</p>	<p>1. (b)</p> <p>For the function $f(x) = x^4 - 16$</p> <p>All the zeros are: $\pm 2, \pm 2i \quad \underline{T}$</p>
<p>2. (a)</p> <p>The remainder found by dividing $f(x) = 3x^{1000} - 2x^{999} + 1$ by $x - 1$ is 2. \underline{T}</p>	<p>2. (b)</p> <p>$(x - 1)$ is a factor of $f(x) = 3x^{1000} - 2x^{999} - 1$</p> <p>$\underline{T}$</p>

Chapter 4

<p>1. (a)</p> $f^{-1}(x) = \frac{1}{f(x)} \quad \underline{F}$	<p>1. (b)</p> <p>$f^{-1}(x)$ is the inverse function of $f(x)$. \underline{T}</p>
<p>2. (a)</p> <p>If $f(x) = x + 1$, then $f^{-1}(x) = \frac{1}{x + 1} \quad \underline{F}$</p>	<p>2. (b)</p> <p>If $f(x) = x + 1$, then $f^{-1}(x) = x - 1 \quad \underline{T}$</p>
<p>3. (a)</p> <p>$\ln(a + b) = \ln a + \ln b \quad \underline{F}$</p>	<p>3. (b)</p> <p>$\ln(ab) = \ln a + \ln b \quad \underline{T}$</p>
<p>4. (a)</p> <p>$\ln(a - b) = \ln a - \ln b \quad \underline{F}$</p>	<p>4. (b)</p> <p>$\ln\left(\frac{a}{b}\right) = \ln a - \ln b \quad \underline{T}$</p>
<p>5(a) $\ln\left(\frac{a}{b}\right) = \frac{\ln a}{\ln b} \quad \underline{F}$</p>	<p>5. (b) $\ln\left(\frac{a}{b}\right) = \ln a - \ln b \quad \underline{T}$</p>
<p>6. (a)</p> <p>$(\ln x)^2 = 2 \ln x \quad \underline{F}$</p>	<p>6. (b)</p> <p>$\ln(x^2) = 2 \ln x \quad \underline{T}$</p>