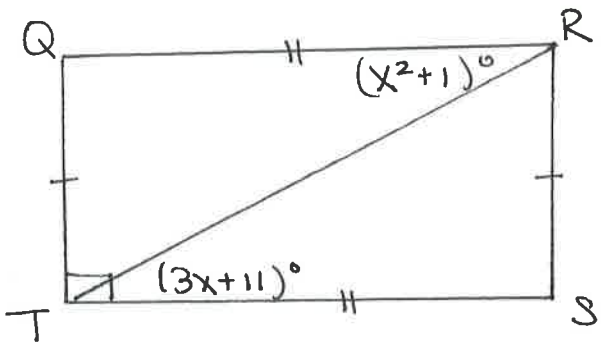
p. 344 # 3 & 4

Quadrilateral QRST is a rectangle.

3. Find x.



Since a rectangle is a parallelogram, I know that alternate interior angles are $\cong$, so $m\angle STR = m\angle QRT$

and $3x + 11 = x^2 + 1$

$0 = x^2 - 3x - 11 + 1$

$0 = x^2 - 3x - 10$

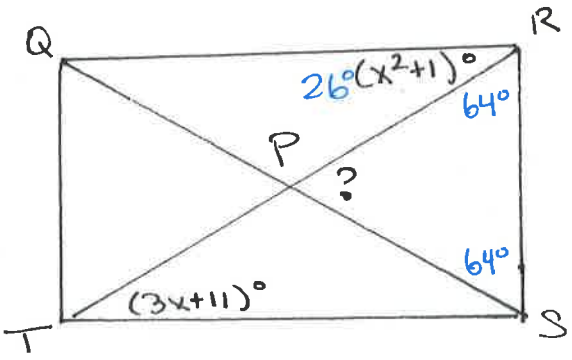
$0 = (x-5)(x+2)$

$x - 5 = 0$ or $x + 2 = 0$

$\boxed{x = 5 \text{ or } x = -2}$

To solve this quadratic equation, I will need to factor, so 1st get one side to $= 0$.

4. Find $m\angle RPS$.



If $x = 5$, then

$x^2 + 1$

$5^2 + 1$

$25 + 1$

$m\angle QRT = 26°$, so $m\angle SRT = 90 - 26$

$= 64°$

and $m\angle PSR = 64°$ b/c isosceles $\triangle$.

angle sum theorem states

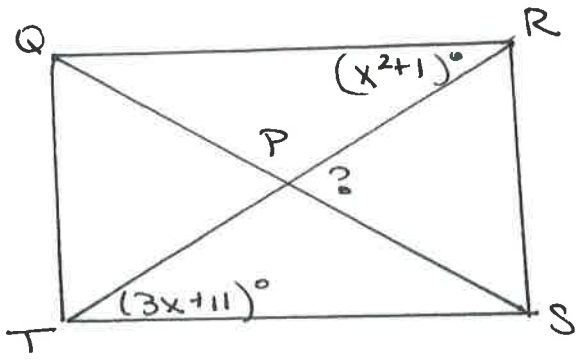
$64 + 64 + ? = 180$

$128 + ? = 180$

$? = 52$

so $\boxed{m\angle RPS = 52°}$

4. (cont'd)



If $x = -2$, same procedure shows:

$x^2 + 1$

$(-2)^2 + 1$

$4 + 1$

$m\angle QRT = 5^\circ$ so $m\angle SRT = 90 - 5$

$= 85^\circ$

and $m\angle PSR = 85^\circ$

b/c is isosceles Δ

angle sum theorem states

$85 + 85 + ? = 180$

$170 + ? = 180$

$? = 10$

So $m\angle RPS = 10$

Final answer: $m\angle RPS = 52^\circ$ or 10°