Friction in the Labor Market – Monopsony Power[1]
In-Class Problem[2]

Let's assume that a labor supply relation (L_S) is parameterized by the equation $L_S = -10+2W$ and $MRP_L = 46 - L_S$ in a labor market with some form of friction, in this case we'll suggest it's experiencing some form of monopsony.

a) Identify the ME_L relation (equation) based on the above.

The equational form we need is $ME_L = (ME_L\ @L_S = 0) + \frac{\text{rise } ME_L}{\text{run } L_S} L_S$. This requires that we identify ME_L when Labor Supply (L_S) = 0. $ME_L = \frac{\Delta TC_L}{\Delta L_S}$, so let's form a table showing W, Q, L_S, MP_L, P, MRP_L, TC_L and ME_L. try to fill in the blanks beginning at a wage of \$19 (W = \$19) and descending to a wage of \$4. This can't be done exclusively with the data given, you'll need an MP_L relation and Price (P), so let's assume that P = \$1, which means $MP_L = 46-L_S$ (the same as MRP_L in this case, but only because P = \$1). Recall that $TC_L = W \times L_S$ and $MRP_L = MP_L \times P$. Note that you can't expressly identify Q in this relation, even though you have MP_L giving you the change in quantity in respect to changes in labor, so Q is given and not calculated (P is also given). I've calculated the changes as we move upwards from the lowest wage; that's why the marginal changes aren't calculated in the bottom row of the table. The table is as follows:

W	Q	L_S	MP_L	P = \$1	MRP_L	TC_L	ME_L
19	868	28	18	1	18	532	32
18	832	26	20	1	20	468	30
17	792	24	22	1	22	408	28
16	748	22	24	1	24	352	26
15	700	20	26	1	26	300	24
14	648	18	28	1	28	252	22
13	592	16	30	1	30	208	20
12	532	14	32	1	32	168	18
11	468	12	34	1	34	132	16
10	400	10	36	1	36	100	14
9	328	8	38	1	38	72	12
8	252	6	40	1	40	48	10
7	172	4	42	1	42	28	8
6	88	2	44	1	44	12	6
5	0	0	46	1	46	0	4
4	-92	-2	-	1	-	-8	-

[1] This problem is intended to present an abbreviated discussion of the included economic concepts and is not intended to be a full or complete representation of them or the underlying economic foundations from which they are built.

[2] This In-Class Problem was developed by Rick Haskell, Ph.D. Student, Department of Economics, College of Social and Behavioral Sciences, The University of Utah, Salt Lake City, Utah (2014).

This will yield $ME_L = 4+L_S$. And with the L_S, MRP_L and ME_L equations we can graph this labor market experiencing friction:

Set the intercepts:

$L_S = -10 + 2W$		**$MRP_L = 46 - L_S$**		**$ME_L = 4 + L_S$**	
W = 0	$L_S = -10 + 2(0)$	$L_S = 0$	$MRP_L = 46 – 0$	$L_S = 0$	$ME_L = 4$
	$L_S = -10$		$MRP_L = 46$		
$L_S = 0$	0 = -10 +2W	$MRP_L = 0$	$0 = 46 - L_S$	$ME_L = 0$	$0= 4= L_S$
	2W = 10		$L_S = 46$		$L_S = -4$
	W = 5				

It's worth mentioning that when you're given the price of the output good, and quantities at any given level of wage and labor supply combination you're able to identify MP_L and MRP_L. The existence of an MP_L or MRP_L equation should simply help you validate that you've chosen the appropriate values. Recall that $MP_L = \frac{\Delta Q}{\Delta L}$ and $MP_l \, x \, P = MRP_L$, (which also means that $MP_L = \frac{MRP_L}{P}$.

Identify the intersections:

$MRP_L = L_S$

To do this we need to normalize MRP_L on L_S that way we can set $L_S=L_S$ and solve for W or W*, which is equal to MRP_L when these two relations are equal to one another (market equilibrium).

$MRP_L = 46 - L_S$ can be rearranged to $L_S = 46 - MRP_L$

-10 + 2W = 46 – W
3W = 56
W* = 56/3 = 18 2/3

Substitute W* into L_S (from above)
L_S= 46 – W = 46 – 18 2/3 = 27 1/3 = L*

$MRP_L = ME_L$

Recall that this is the generalized condition applicable to perfect or imperfect labor markets, which also means that ME_L and MRP_L are both equal to W* in competitive labor markets.

$46 - L_S = 4 + L_S$
$2 L_S = 42$
$L_S = 21$ which is the quantity of labor the monopsony producer will hire (L^M)

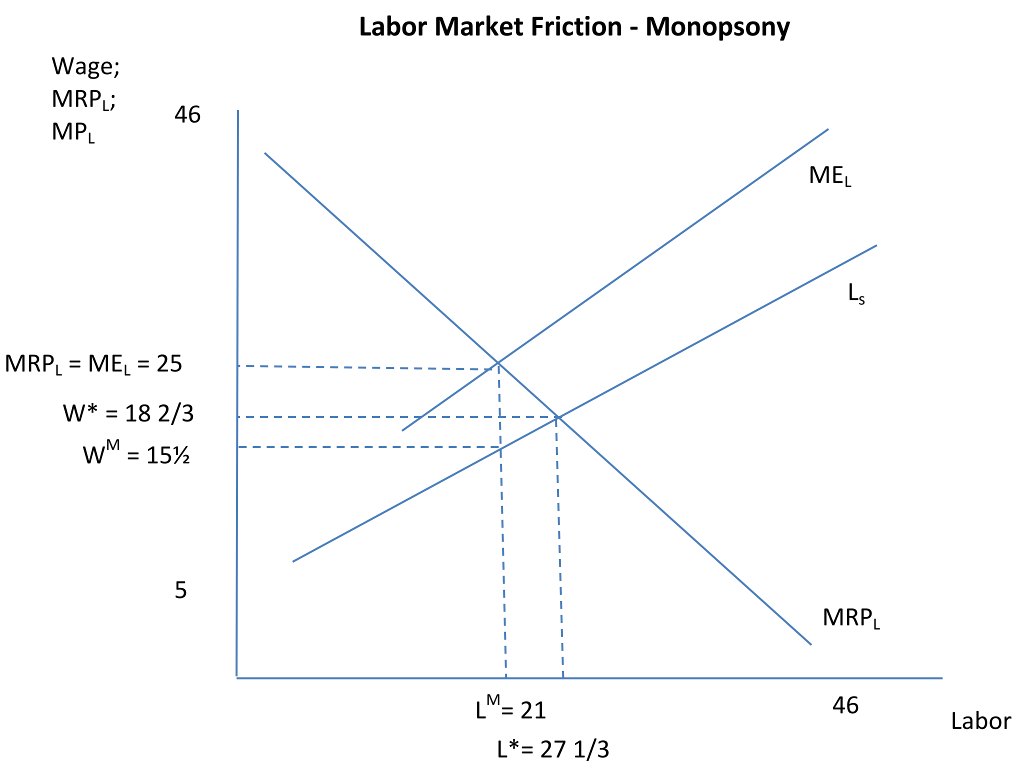
Substitute $L_S = 21$ into MRP_L
MRP_L = 46 – 21 = 25. Think about this as MRP_L or ME_L since they've the same as we've set the equations equal to each other and they're both measured in currency units on the same axis (Y).

$L_S = L_M$

Knowing the number of labor units the employer will hire, we can now identify what they'll require to be paid as we substitute that value (21) into the labor supply equation (L_S):

$L_S = 21 = -10 + 2W$
$2W = 31$
$W = W^M = 15 \frac{1}{2}$

And with all of this we can complete our graphic model:



It's worth noting here that the monopsony producer could choose to pay any amount < 25 and > 15 ½ and still have some surplus value created through labor's product. Likewise the producer could choose to hire labor u nits > 21 and < 27 1/3.